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DAYTON UNIV OH SCHOOL OF ENGINEERING

F/G 5/1

PENETRATION STUDY: BEHAVIORAL ASPECTS OF DECISIONS UNDER UNCERT--ETC(U)

JAN 80 D RIPPY, P SWEENEY

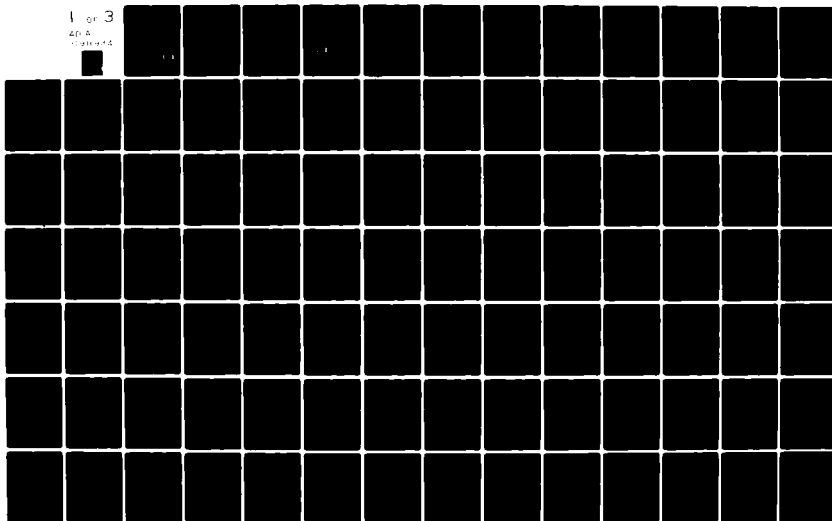
F33615-80-C-5139

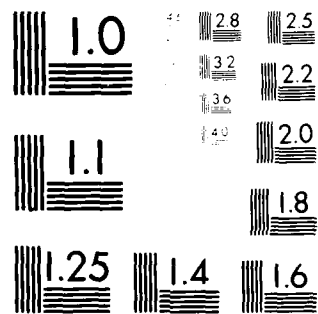
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1 of 3

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9 FINAL REPORT,

6 PENETRATION STUDY: Behavioral Aspects of
Decisions Under Uncertainty During Weapon
System Acquisition.

11 Jan 1980

Prepared for

Air Force Business Research Management Center
Wright-Patterson Air Force Base
Dayton, Ohio 45433

under Contract F33615-80-C-5139

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by

10 D. Rippey
P. Sweeney

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MAY 14 1981

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DAYTON, OHIO 45469

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20. ABSTRACT (Continue on reverse side if necessary and identify by block number) The objective of this study was to conduct a survey of the available sources of information in order to identify sources of knowledge and information about the behavioral aspects of decision-making, uncertainty, and risk analysis in the Department of Defense acquisition process. Throughout the survey, an effort was attempted to emphasize those topics and sources that can be directly related to the risk analysis and decision framework of the weapons system acquisition process as defined in DODD5000.1 and DODD5000.2. In addition, the study concentrates specifically on those topics and sources of information		

that address individual and small group behavior in the uncertain decision environment.

As a result of this contract effort, the study team also developed a catalog of sources of knowledge and information for use by acquisition managers and their staffs to improve their understanding of individual and small group behavior in the uncertain decision environment. This catalog is included as a part of the contract and addresses, in alphabetical order by author and/or topic, those articles that may be of interest to acquisition managers. In each case, in addition to the title, author, and source of the document, a complete abstract is provided in the catalog.

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EXECUTIVE SUMMARY

The objective of this study was to conduct a survey of the available sources of information in order to identify sources of knowledge and information about the behavioral aspects of decision-making, uncertainty, and risk analysis in the Department of Defense acquisition process. Throughout the survey, an effort was attempted to emphasize those topics and sources that can be directly related to the risk analysis and decision framework of the weapons system acquisition process as defined in DODD5000.1 and DODD5000.2. In addition, the study concentrates specifically on those topics and sources of information that address individual and small group behavior in the uncertain decision environment.

As a result of this contract effort, the study team also developed a catalog of sources of knowledge and information for use by acquisition managers and their staffs to improve their understanding of individual and small group behavior in the uncertain decision environment. This catalog is included as a part of the contract and addresses, in alphabetical order by author and/or topic, those articles that may be of interest to acquisition managers. In each case, in addition to the title, author, and source of the document, a complete abstract is provided in the catalog.

The contractor utilized the Defense Technical Information Center and the DIALOG Information Retrieval Service of the Lockheed Missiles and Space Company to provide listings and abstracts of appropriate documents. Key words used by the study team included risk, risk analysis, decision-making, uncertainty, small group behavior, group decision-making, etc., etc., as entering arguments into the data bases.

It was determined that in almost all cases in the weapons systems acquisition process the opinion of experts based upon their experience is critical to the measurement of risk and uncertainty. These factors of risk and uncertainty as measured by expert opinion contribute to the subjective probability that an event will occur with a specific probability.

Several authors were quite concerned with the reliability of so-called expert 'testimony'. Several others were very concerned about the ability to determine the relative accuracy of these estimates and none were able to suggest methods of determining the adequacy of the expert opinion. In fact, H. M. Parsons concluded that the reliance on system designers for the opinion and preferences of experts is foolhardy. Such experts may provide suggestive leads but are not reliable guides as demonstrated by repeated disagreement with objective data. In several technologies, the aggregated group opinion or consensus is used as the value to be entered in the risk analysis model. It is questionable whether or not this group response can be aggregated in a meaningful manner. There is no way to evaluate the aggregated group response. This creates some serious difficulties because generally group opinions are used as entering arguments in risk analysis models. There is evidence that external pressures to conform to the popular or top-level management preferences or a desire to avoid rocking the boat may seriously affect the group decision-making process. The impact of the leader upon the group was discussed by several authors and was generally agreed upon to be one of the most serious difficulties in evaluating the parameters for the risk assessment models. Another area that impacts on the accuracy of the subjective probabilities is the accountability of the participants. It suggested that lacking accountability, a participant cannot blame nameless others for any findings he does not like. Several authors conclude that valid techniques to collect subjective judgments are neither available nor are they likely to be developed in the immediate future. Several also mentioned that at the present time a complete, well-documented, real-life case study of a major development program is still very much needed to bridge the credibility gap between practice and theory in the area of risk analysis.

There is even difficulty in developing subjective judgments within the contractor organizations. The contractor may have difficulty in getting his own experts to accurately transmit their perceptions upward to their superiors, if they perceive these values to be 'out-of-line'. If it is difficult for the contractor to develop subjective probabilities, it becomes impossible for the system program office who is responsible for the overall performance to evaluate the validity of these subjective probabilities. As time passes in the weapons acquisition process, there is indication that, should the contractor performance be below what is expected, the contractor may show great reluctance to provide unfavorable information to the system program office, especially in the situation like the A-10 where a company's virtual survival as a prime contractor may depend upon an impending production decision. Given that the data from the contractor is subject to wide variability--

depending upon the level of expertise, the background in decision analysis, the background of the so-called experts in probability theory, the management philosophy of the company, and the importance of the contract--it is unlikely that the system program office would receive from the contractor highly credible data. If unacceptable data is received from the contractor, it is extremely difficult for the system program office to develop acceptable estimates for the risk analysis programs.

Presently, the decision-making systems or risk analysis programs are designed for the user and this would include, of course, the contractor and the system program office personnel rather than for the task at hand. Several authors indicate that it might be more cost-effective to develop specific risk analysis programs for specific programs based on the relative experience of the personnel at the contractor office, the system program office, and at the decision-making level.

Regardless of the sophistication, elaboration, or expertise of the scientists and engineers who are providing the scientific data that is entered into the risk analysis models, there is no indication at the present time that the modeling techniques are capable of handling irrational acts either by man or by nature. For instance, to have predicted that the United States would currently have 52 persons hostage in Iran, a friendly country only two years ago, is a problem that would probably not have been modeled two years ago. Pending Congressional findings, alterations that may delay production as much as 12 months with the associated rise in cost are difficult if not impossible to model in an objective manner. These particular difficulties have led many to believe that it would be foolhardy to expect a valid risk analysis for every major program and therefore at the present time there are indications that in order to comply with the Department of Defense requirements many program offices are merely giving risk analysis formal lip service.

Many authors were very concerned about having experts assign particular values in the risk models when the personnel who were assigning these particular values had no particular stake in the results. Similarly, they were very concerned with the values that would be utilized by those whose very jobs and/or careers could be significantly affected by the decision concerning a particular weapons system. In the area of weapons acquisition, specifically, there was a great amount of data that indicated that the experts were constantly overly optimistic.

In the area of small group behavior, it is interesting to note that a decision made by a particular group at a particular time on a particular subject could be altered at a later time

on a similar subject. There appears to be a number of outside, interactive forces that can impact upon the decision arrived at by a single group. As far as group decisions, it is generally conceded that group decisions are better than individual decisions. This is based primarily on the group dynamics and the interaction of the participants within the group. Additional data supports the synergism of group dynamics. Several authors show how to improve this synergism and almost all agree that the groups are more risky than the individuals. However, there are presently no formal screening or evaluation procedures or computer programs that can evaluate the decisions made by the individual groups. In developing group solutions, there is a great dependence upon the group members asking the right questions and then being able to answer these questions in a scientific manner. Again, given the fact that the right questions are asked and the right answers are given, there is difficulty in measuring the effectiveness of these particular numbers as applied to the risk analysis process. There are indications that individual group members may concern themselves more with reaching consensus than with the quality of the agreed judgment. Various factors--such as individual dominance through personality characteristics or rank or position within the organization--may influence the judgment of the individuals in the group and therefore the group consensus. This is particularly of interest since the individual characters in the drama are irrelevant to the task and/or the evaluations or numbers that are to be provided for the risk analysis. The researchers investigated several behavioral interaction techniques including the Delphi method, the normal group technique, the modified normal group technique, the consensus technique, and the no interaction technique. Authors differ as to which provides the best group solutions. Some favor the Delphi method and some the normal group technique. In order to improve the group consensus--and here when we speak of the group consensus, we are talking about a group of experts--it was suggested that possibly the training of these experts in probabilistic thinking could lead to significant improvement in their quantification of uncertainty. One author seemed to indicate that interaction tends to increase the certainty of the group, decreases the calibration, and decreases disagreement among group members. However, in many instances, simple averaging of individual assessments without any group interaction may be the most desirable, simply because it is the easiest to use.

The authors were able to determine that there was very little information that directly addressed the small group behavior in uncertain decision environments such as the acquisition process. There was great disagreement among experts concerning the validity of the different group dynamics processes. All generally agreed that better data for risk analysis models could be obtained if personnel could be trained in probabilistic methods and would be held responsible for the decisions that resulted from the output of the group analysis.

SOURCES AND METHODOLOGY

The conduct of this study required an extensive search of existing literature. Searches were performed at the libraries at Wright State University and the University of Dayton. Additionally, abstract searches were performed with Defense Technical Information Center (DTIC) and the DIALOG Information Retrieval Service from Lockheed Information Systems.

Three data bases were searched within the DIALOG System.

A. The ABI/INFORM database scans approximately 400 primary publications in business and related fields and stresses general decision sciences information.

B. The Management Contents database provides current information in decision-making and forecasting. Approximately 200 United States and foreign journals, proceedings, and transactions are searched for information.

C. Psychological Abstracts covers existing literature in psychology and behavioral sciences. Over 900 periodicals and 1500 books, technical reports, and monographs are searched each year for inclusion in the database.

The abstracts received from DTIC were reviewed and those documents which appeared to be relevant to this study were ordered. The documents identified from the three data base searches through the DIALOG System were also obtained. Over one hundred documents were obtained and reviewed for information relating to the behavioral aspects of decision-making under conditions of uncertainty and to the area of RISK analysis.

Abstracts were written where required and these, along with provided abstracts, were used in developing the annotated bibliography required by the contract.

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 777 585 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

Quantitative Risk Assessment: A Test
Case.

(U)

DESCRIPTIVE NOTE: Master's thesis.

MAR 74 130P Amdor, Stephen L. ; Kilgore,

Roy R. ;

REPT. NO. GSA/SM/74-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement, *Risk,
Logistics planning, Weapon systems, Acquisition,
Analysis of variance, Regression analysis,
Computer programs, Theses

(U)

Since the requirement for formal risk management in
all major development programs, several methodologies
have been suggested but few have been implemented
with persistence. The Air Force Academy
Risk Analysis Study Team suggested that a
quantitative risk assessment technique based on
network simulation and subjective probability
estimates could be used to assess risk in the three
primary development variables: cost, schedule, and
technical performance. The thesis attempted to
determine the feasibility and practicality of
applying such a methodology to the A-10 Full
Scale Development Program for cost and schedule
variables only. (Modified author abstract)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B011 925L 17/9 15/5

MANTECH OF NEW JERSEY CORP NEW SHREWSBURY COMMUNICATIONS
AND SYSTEMS OPERATION

AN/TPQ-36 Mortar Artillery Locating Radar
Transport Configuration Decision Risk
Analysis.

(U)

DESCRIPTIVE NOTE: Final rept.

JAN 75 264P

CONTRACT: DAAB07-74-D-5021

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; 30 Jun 76. Other requests for
this document must be referred to Commander, Army
Electronics Command, Attn: DRCPM-MALR-LM.
Fort Monmouth, N. J. 07703.

DESCRIPTORS: *Artillery locator radar, *Mortar
locator radar

(U)

IDENTIFIERS: AIR TRANSPORTATION, AN/TPQ-36, ARTILLERY,
CARGO AIRCRAFT, COSTS, C-130 AIRCRAFT, DECISION
THEORY, MALOR(MORTAR ARTILLERY LOCATING RADAR), MORTAR
ARTILLERY LOCATING RADAR, MORTARS, OFF ROAD TESTS,
POSITION FINDING, RADAR, RISK ANALYSIS, TRANSPORT

(U)

This Decision Risk Analysis (DRA) responds
to the task of determining the best transport
configuration for the transport of the AN/TPQ-36
Mortar Artillery Locating Radar (MALOR)
when this system is deployed to the field during the
1980-1985 time period. From the outset and
continuing through the DRA processes, the systems
interrelationship of transport was valued as the
imperative to govern analysis and evaluation of
alternative transport configurations. Any viable
alternative must have the capacity to contain total
AN/TPQ-36 loads in a one-time lift. The
capacity of fully qualified alternatives must be
adequate to accommodate growth in weight and linear
dimensions. Also viable alternatives must be
capable of moving AN/TPQ-36 Loads commensurate
to MALOR mission and mission environmental
criteria. A fully qualified candidate must be
capable of extended cross-country operations and air
transportability by C-130 Cargo Aircraft. The
AN/TPQ-36 MMLR Transport Configuration DRA
has demonstrated the suitability of alternative
vehicles as a basis for choosing the best transport

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 746 245 15/5

ARMY MATERIEL SYSTEMS ANALYSIS AGENCY ABERDEEN PROVING
GROUND MD

Compendium on Risk Analysis Techniques. (U)

DESCRIPTIVE NOTE: Special pub.,
JUL 72 132P Atzinger, Erwin M. ; Brooks,
Wilbert U. ; Chennick, Michael R. ; Eisner, Brian
; Foster, Ward V. ;
REPT. NO. AMSAA-SF-4
PROJ: ROT/E-1-P-765801-MW-11
TASK: 1-P-765801-MW-1102

UNCLASSIFIED REPORT

DESCRIPTORS: (-LOGISTICS, -ARMY PROCUREMENT),
MATHEMATICAL PREDICTION, MANAGEMENT ENGINEERING,
DECISION MAKING, MONTE CARLO METHOD, STATISTICAL
ANALYSIS, MATHEMATICAL MODELS, NETWORKS (U)
IDENTIFIERS: BAYES THEOREM, STATISTICAL ANALYSIS,
-RISK ANALYSIS, SUBJECTIVE PROBABILITY, DELPHI
TECHNIQUE (U)

The evolution of risk analysis in the materiel
acquisition process is traced from the Secretary
Packard memorandum to current AMC guidance.
Risk analysis is defined and many of the existing
techniques are described in light of this definition
and their specific role in program management and
systems analysis activities. Sections are included
on subjective probability, Monte Carlo, Network
Analysis, and Bayesian Statistics. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A016 040 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Model to Predict Final Cost Growth in a
Weapon System Development Program. (U)

DESCRIPTIVE NOTE: Master's thesis.
AUG 75 173P Babiarz, Anthony S. ; Giedras,
Peter W. ;
REPT. NO. SLSR-49-75B

UNCLASSIFIED REPORT

DESCRIPTORS: *Weapon systems, *Cost analysis,
Procurement, Costs, Risk, Uncertainty, Delphi
techniques, Mathematical models, Computer programs,
Theses, Logistics, FORTRAN (U)
IDENTIFIERS: *Risk analysis, FORTRAN 4 programming
language (U)

The increasing cost growth within the DoD
military weapon system acquisition process has been
the object of attention for many years. With
limited resources and shrinking budgets a viable
technique to monitor and control cost growth is
needed. The reason for cost growth may be related
to the elements of uncertainty within a development
program. A conceptual model, previously developed
to cope with uncertainties in a weapon system
acquisition program, was used to determine its
applicability for use in the present study. The
model relates the concepts of entropy, information,
uncertainty and costs in an effort to predict final
costs based on a measure of uncertainty. The
measure of uncertainty is entropy, or a lack of order
in the information available to the program manager.
The model attempts to express final development
cost as a ratio of initial cost estimates to program
entropy. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-8042 724L 1/3 1/2 15/5

BOEING AEROSPACE CO SEATTLE WA BOEING MILITARY AIRPLANE
DEVELOPMENT ORGANIZATION

New Strategic Airlift Concepts Study.
Volume I. Executive Summary.

(U)

DESCRIPTIVE NOTE: Final rept.,

JUL 79 57P Barber, E. A. ;

REPT. NO. D180-25197-1

CONTRACT: F33615-78-C-3024

PROJ: 2404

TASK: 01

MONITOR: AFFDL TR-79-3051-VOL-1

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Jul 79. Other requests for
this document must be referred to Director, Air Force
Flight Dynamics Lab., Attn: FXB, Wright-
Patterson AFB, OH 45433.

SUPPLEMENTARY NOTE: See also Volume 3, AD-8042
725L.

DESCRIPTORS: *Jet transport planes, *Aeronautical
engineering, *Airlift operations, Life cycle costs,
Strategic analyses, Logistics support, Long
range(Distance), Risk, Threat evaluation, War
games, Joint military activities, Logistics
planning, NATO, Military aircraft, Aircraft
nuclear propulsion, Turboprop engines, Airships,
Gliders

(U)

IDENTIFIERS: Aircraft design, Boeing 747 aircraft,
PE62201F, WUAFDL24040103

(U)

The New Strategic Airlift Concepts Study
had as its purpose the design, analysis and
evaluation of aircraft concepts and technologies
which could be utilized in a new, long range,
military heavy logistics transport intended for
service in the 1990's. Eight conceptual aircraft
were configured and analyzed: (1) New Turbofan,
(2) Derivative of the 747-200F, (3) Lighter-
Than-Air (airship), (4) Detachable Cargo
Pod, (5) Nuclear, (6) Distributed Load
aircraft with twin fuselages for wing-bending-moment
relief, (7) Tug-Glider combination, (8)
Advanced Turboprop (Propfan). Advanced
technology was used extensively for all concepts
except the Derivative. Phase I of a two stage

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A061 874 5/1 5/3

ARMY PROCUREMENT RESEARCH OFFICE FORT LEE VA

Economic Price Adjustment (EPA)
Provisions.

(U)

DESCRIPTIVE NOTE: Final rept..

DEC 77 87P Beeckler, C. Eugene ; Newlin,

Kimrey D. ;

REPT. NO. APRC-703

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Costs,
Contracts, Policies, Department of Defense,
Inflation(Economics), Risk, Profits, Cost
analysis

(U)

IDENTIFIERS: EPA(Economic Price Adjustment),
Fixed price contracts

(U)

This report reviews the US Army Materiel Development and Readiness Command's (DARCOM) Economic Price Adjustment (EPA) experience. In the fall of 1973 few DARCOM contracts contained EPA provisions and the resulting inflation caused many DARCOM contractors to absorb large cost increases on their firm-fixed-price contracts. Although many contractors requested relief as a result of inflation, there was no legal method to grant relief since they did not contain EPA provision. Since the current economic trend foresees continued inflation, a need exists to study recent DARCOM EPA experience to preclude a repeat of the past. The writers believe that Economic Price Adjustment provisions are necessary contractual options available to the Contracting Officer in the selection of contract type. The contract type should be a fair, reasonable, and equitable risk allocation between the contract prices. The report concludes that today's EPA policy promulgated since 1974 dictates current usage. The findings show that current usage fails to take into account DOD policy on risk, profit, contract type, and cost analysis. The recommendations include: revision to DOD policy on EPA, risk, profit, contract type, and cost analysis; areas of emphasis on the use of EPA; and potential areas for future studies.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A021 189 19/1 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the 155mm Cannon-Launched
Guided Projectile. (U)

JAN 76 15P Beeson, James B. ;Trier,
Norman H. ;Netzier, Martin , Jr;
REPT. NO. AMSAR/SA/N-38

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A019 932.

DESCRIPTORS: *Guided projectiles, *Risk analysis,
Gun launchers, Network flows, Contract
administration, Statistical distributions, Cost
analysis, Scheduling (U)
IDENTIFIERS: 155 MM projectiles (U)

A risk analysis of the schedule and cost associated
with the development of the Army 155mm CLGP was
performed. The time frame considered for this
analysis is 'Begin Engineering Development' in
July 1975 to 'Multi-Year Buy'. This
analysis is an extension of one performed in Dec 74
and is in preparation for an ASARC/Dsarc 3.
The VERT risk analysis technique was employed to
perform the analysis. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B034 225L 9/1 17/2

NAVAL AVIONICS CENTER INDIANAPOLIS IN

Technical Risk and Life-Cycle Cost (LCC)
for the BISS Imaging Communications RF
Coaxial Cable Subsystem.

(U)

DESCRIPTIVE NOTE: Final rept. for FY 78,
DEC 78 45P Relling, Donald K. ;
Bullock, Gary L. ;
REPT. NO. NAC-TR-2196

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Dec 78. Other requests for
this document must be referred to Commander, Electronic
Systems Div., Attn: BISSPD, Hanscom AFB,
MA 01731.

DESCRIPTORS: *Coaxial cables, *Radiofrequency
cables, Life cycle costs, Risk, Communication
equipment, Video signals, Image processing,
Demodulators, Modulators, Cost estimates,
Transmission lines

(U)

This report addresses the technical risks
associated with, and the Life Cycle Cost
(LCC) Analysis, for the BISS imaging
Communications RF coaxial communications subsystem.
Technical risk is defined along with a description
of the subsystem operation. This is followed by
what is felt the technical risks are for the
development of the coaxial cable subsystem equipment.
In the area of LCC, a link length of two miles
was assumed for the analysis. The calculations were
made for a minimum of 50 deployed subsystems and a
maximum of 250 deployed subsystems. (Author)

(U)

Inheriting Risk in Acquisition
or Merger

DESCRIPTIVE NOTE:

Financial Executive

September, 1978

Volume 26

Betterley, Delbert A.

This article considers the risk element that must be considered in an acquisition/merger consideration. In such a situation both the question of what a new company can do for you (business risk) and what it may do to you (loss risk) must be addressed.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 766 885 15/5 5/1

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

A Proposed Methodology for Weapon System
Development Risk Assessment. (U)

DESCRIPTIVE NOTE: Master's thesis,
JUN 73 140P Bevelhimer, Herbert L. ;
REPT. NO. GSA/SM/73-3

UNCLASSIFIED REPORT

Available in microfiche only.

DESCRIPTORS: (*GOVERNMENT PROCUREMENT, WEAPON SYSTEMS),
COSTS, DECISION MAKING, UNCERTAINTY, STATISTICAL
ANALYSIS, THESES, MANAGEMENT PLANNING AND CONTROL (U)
IDENTIFIERS: LOGISTICS MANAGEMENT, NETWORK
ANALYSIS(MANAGEMENT), PERT, *RISK, COST OVERRUNS (U)

Formal risk analysis has become a required part of the weapons acquisition process since 1969. Many methods of quantitative risk assessment require extensive data collection solely for risk purposes. Frequent assessments thus become costly. The thesis proposes a risk assessment methodology that uses contractor-reported data extracted from the standard Cost Performance Report and Schedule Status Report. A graphical network of a project is constructed using the symbology and logic available with the Venture Evaluation and Review Technique (VERT) computer routine. Each network arc is made to correspond with a contract work breakdown structure element. The marginal probability density functions of the network arcs are assumed to be Beta distributed. The parameters of each arc's time and cost distribution are determined using the contractor's monthly revised estimates for work breakdown element costs and completion dates and applying the method of moments. A test application on a weapons system currently in full-scale development was conducted. The test results, although inconclusive, did tend to show promise and merit further application of the methodology. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A042 942 5/1

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

SNAP - Simplified Network Analysis
Portrayal for Planning and Control. (U)

DESCRIPTIVE NOTE: Study project rept.,
MAR 77 49P Brown, Kenneth N. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Network analysis(Management),
*Management planning and control, Decision making,
Risk analysis, PERT, Interactions, Army
planning, Simplification, Methodology,
Organization theory, Flow charting (U)
IDENTIFIERS: Project management, Gantt charts (U)

Network techniques are widely used to assist the manager in understanding, planning, and controlling complex projects. The more complex approaches such as decision-risk analysis and PERT/CPM explore alternatives and deal with interactions. Any complex enterprise must consider alternatives and interactions, but there is virtue in simplicity. This report explores a simplified network analysis approach which gives special consideration to evaluation as part of the process of achieving objectives. It capitalizes on the idea that evaluation results in a decision, and that in turn, this gives visibility to alternatives. The technique can be tailored to the level of management and the task addressed by the manager/network-user. Experience with two major tasks within different Army projects is related to show how the technique was applied. The future application is explored by codifying the technique with regard to its basic considerations and mechanics and by suggesting the scope of its utility. (U)

An Analysis of Group Decisions
Involving Risk ("The Risky Shift")
DESCRIPTIVE NOTE:
Human Relations
Volume 22, Number 5
pp 381-395
Burnstein, Eugene

This article presents an analysis
of the conditions under which
groups in a laboratory situation
commit themselves to a goal,
demands extraordinary effort
or skill and whose probability
of achievement is not high.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B010 641L 19/7 14/1 9/2

ARMY MISSILE COMMAND REDSTONE ARSENAL ALA SYSTEMS ANALYSIS
OFFICE

Improved LAW Cost and Schedule Risk
Analysis. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 75 26P Carodine, Frederick ; Esslinger,
William H. , Jr.; Laube, Hannes ; Blue, David
L. ;
REPT. NO. C-TR-75-14

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Contractor Performance Evaluation: Oct 75. Other
requests for this document must be referred to Commander,
Army Missile Command, Attn: ILAW Project
Office, Redstone Arsenal, Ala. 35809.

DESCRIPTORS: (*Rockets, Cost analysis),
(*Computer programs, Risk analysis), (*Antitank
ammunition, Uncertainty), Spin stabilized
ammunition, Critical path methods, Systems
engineering, Assessment, Probability (U)

IDENTIFIERS: LAW(Light Antitank weapons),
Light antitank weapons, M-72 rockets(66-MM),
Law rockets, Design, Statnet computer program (U)

This risk analysis evaluates the schedule
uncertainty and the cost uncertainty in the
Engineering Development phase of the Improved
LAW program. The 'STATNET' computer program was
used to assess these uncertainties. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B022 209L 19/7 5/1

ARMY MISSILE COMMAND REDSTONE ARSENAL ALA SYSTEMS ANALYSIS
OFFICE

VIPER Schedule Risk Analysis. (U)

JAN 77 4EP Caroline, Frederick :
REPT. NO. C-TR-77-2

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only:
Test and Evaluation: Jan 77. Other requests for
this document must be referred to Commander, Army
Missile Research and Development Command. Attn:
DRDMI-TI, Redstone Arsenal, AL 35809.

DESCRIPTORS: *Viper rockets, *Antitank weapons,
*Network analysis(Management), Test and
evaluation, Scheduling, Risk analysis, Cost
estimates, Delay, Uncertainty, Probability,
Research management (U)

This document presents an analysis of the research
in the development of the Viper Antitank
Rocket, indicating the schedule of research, and
items which could possibly affect, and delay, that
schedule. (U)

What Are The Risks In
Risk Analysis
DESCRIPTIVE NOTE:
Harvard Business Review
July-August, 1972
Carter, E. Eugene

Installing risk analysis throughout a company is a difficult, time-consuming, and expensive operation. Some companies may have an easier time of it than others: the author suggests, for example, that a strongly decentralized organization may be able to bend risk analysis to its purposes more easily (other things being equal) than a strongly centralized organization can. He cites many other relevant factors as well: human reaction and resistance, difficulties inherent in the technique itself, problems of integrating risk analysis procedures with management procedures that already exist in the company, and so forth. This article focuses on the experiences four major oil companies have had in using risk analysis, experiences that cover the range from "success" to "complete failure." The author outlines and discusses the factors that seemed to ease the introduction of risk analysis in the companies that used it with relative success and the factors that dragged the technique down in the companies in which its introduction finally proved an abortive undertaking. He provides a useful checklist of potential troublespots for managers who are thinking of adopting risk analysis in their own companies.

Large Engineering Project
Risk Analysis
DESCRIPTIVE NOTE:
IEEE Transactions On
Engineering Management
August, 1979
Vol. Em. - 26, No. 3
Chapman, Chris B.

Abstract—This paper describes the current status of SCERT (Synergistic Contingency Evaluation and Response Techniques). SCERT is an attempt to provide a systematic approach to the planning and financial evaluation of large engineering projects involving significant risks. Its mathematical basis is a decision tree/semi-Markov process representation of a project. This basis is integrated with qualitative risk assessment procedures. The emphasis is preplanning positive responses to potential contingencies, the need to get approximate answers to the right questions, and the need to integrate specialist expert opinion of various kinds and more general seasoned intuition. Development took place at an academic level during 1976 as a consequence of discussions with potential users, which suggested the need to synthesize the main methodological features of two projects undertaken during 1975 by Acres Consulting Services Ltd. One was an assessment of the risks associated with alternative construction schedules for a gas pipeline from the high Arctic to the Canada-U.S. border. The other was an assessment of the risks associated with alternative bid packages for a fixed price contract to construct a thermal power station in Iraq. Development during 1977 has centered on a test-case application to a North Sea pipeline project.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A006 749 5/1

MINNESOTA UNIV MINNEAPOLIS MANAGEMENT INFORMATION SYSTEMS
RESEARCH CENTER

Analysis and Design of Computer-Based
Management Information Systems: An
Evaluation of Risk Analysis Decision Aids. (U)

DESCRIPTIVE NOTE: Working paper series (Final).
SEP 74 197P Cherny, Norman L.; Sauter,
Richard F.;
REPT. NO. Monograph-5
CONTRACT: N00014-67-A-0113-0017
PRGJ: NR-049-300

UNCLASSIFIED REPORT

DESCRIPTORS: *Management information systems,
*Decision making, *Risk, Uncertainty,
Statistical analysis, warehouses, Expansion,
Computer programming, FORTRAN (U)
IDENTIFIERS: CDC 6400 computers, CDC 6600
computers, Sales, Demand (Economics) (U)

This report evaluates the use of three different
forms of risk analysis decision aids, one
deterministic and two probabilistic versions, in a
warehouse expansion decision context. In addition,
several decisionmaker characteristics-experience,
background, attitude toward quantitative data,
attitude toward computer potential in management, and
risk preference-are examined in conjunction with the
three decision aids. The impact of these factors
is measured in terms of (1) decision made,
(2) supporting documentation for the decision
made, and (3) evaluation of the decision
aid. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A080 196 12/2 15/5

LOGISTICS MANAGEMENT INST WASHINGTON DC

Statistical Risk Properties of the Logistic
Support Cost Commitment.

(U)

DEC 79 121P Collins, Dwight E. ;
REPT. NO. LMI-ML900
CONTRACT: MDA903-77-C-0370

UNCLASSIFIED REPORT

DESCRIPTORS: *Logistics support, *Cost estimates,
*Operations research, Risk, Statistical analysis,
Costs, Reliability, Design to cost, Life cycle
costs, Cost models

(U)

In recent years, several new contractual arrangements have been devised to estimate, target, and track logistic support costs during the acquisition phase. One of these is a contractual mechanism known as a Logistic Support Cost Commitment (LSCC), sometimes referred to as a Support Cost Guarantee. The objective of the LSCC is to motivate the contractor to design his equipment to have reduced logistic support costs through increased reliability and maintainability (R&M) when fielded. This report documents research into the statistical properties of the LSCC. The LSCC utilizes one of a broad class of statistical estimators, which are complex mathematical functions of simpler estimators whose statistical properties are well known. In the LSCC case, the complex estimator is a cost function, and incorporates such simpler estimators as rates of occurrence, durations of activity, and physical distribution of activity. It also includes constant cost rates. The research documented is primarily mathematical. It does not treat in-depth the numerous qualitative issues regarding LSCC use.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A051 919 17/7

ARINC RESEARCH CORP SANTA ANA CALIF

Cost/Schedule Risk Analysis of Engineering
Development Phase for Army User Equipment
of GPS.

(U)

DESCRIPTIVE NOTE: Technical note.

APR 77 33P

REPT. NO. W77-1172-TN01

CONTRACT: F04701-76-C-0028

UNCLASSIFIED REPORT

DESCRIPTORS: *Global positioning system, Costs.
Scheduling, Risk, Radio navigation

(U)

The NAVSTAR GPS is a space-based radio navigation system that will permit users to determine accurately their three-dimensional position and velocity in real time. The GPS will consist of a space segment (satellites), control segment (ground monitors and control stations), and user segment (manpack, vehicular, airborne, and shipborne navigation sets). The network analysis program 'Advanced SOLVNET' was selected as the vehicle for performing the cost analysis of the Army user equipment Phase II effort. SOLVNET networks consist of (1) arcs, representing activities, and (2) nodes, representing the events (milestones) and logic of the project activity sequence. SOLVNET nodes consist of input and output rules. When the proper input rule conditions are realized, the node is said to be satisfied and its output arcs are initiated according to its output rule.

(U)

University of Pennsylvania
A New Method for Risk Analysis
DESCRIPTIVE NOTE:
Sloan Management Review
Spring, 1979
Cozzolino, John M.

Commonly used methods for evaluating investments consider the monetary flows associated with a project and ignore the firm's ability or willingness to assume the business risk of the project. A new type of risk profile curve gives an objective measurement of the risk-adjusted value of a project. This new method can be combined with traditional investment evaluation techniques to give managers a tool to set, communicate, and maintain a consistent risk-tolerance policy.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A046 651 5/1 12/1 14/1

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

A Case Study in Risk/Decision
Analysis.

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 73 49P Crawford, Leslie P. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Risk analysis, *Cost analysis,
*Decision making, Resource management,
Retrofitting, Case studies, Trade off analyses,
Risk, Estimates, Cost effectiveness, Weapon
systems, Military procurement, Statistical analysis
IDENTIFIERS: Program management

(U)

(U)

The increasing emphasis being placed on risk analysis in DOD has made the subject a focal point for program managers. The individual services are required to estimate or subjectively determine the risk inherent in their programs by conducting a risk assessment. The case study developed in this report is an attempt to inject a quantification of risk based on the facts available and the use of probability and statistics. A decision analysis is then applied to assist the decision maker in definitizing his options on a dollar basis. Various trade-offs and evaluation criteria are used to transfer the degree of risk to this dollar base. Each cost schedule, and performance parameter is treated on an equal risk basis. (Author)

(U)

Contextural Correlates of R and D Team
Collaborative Problem Solving
Dailey, Robert: Morgan, Cyril P.

This article is a report concerning a study which examines the relationships between R and D team collaborative problem solving and four theoretical team predictors: (1) Team cohesiveness, (2) Task certainty, (3) Task interdependence, and (4) Team size. The results of the study generally indicate that cohesiveness and task certainty are important predictors of perceived R and D team collaborative problem solving.

Group, Task, and Personality
Correlates of Boundary-Spanning
Activities

DESCRIPTIVE NOTE: Human Relations
Volume 32, No. 4, 1979, pp. 273-285
Dailey, Robert C.

Boundary-spanning activities were studied in 15 organizations engaged in basic and applied research. Included in the study were 281 scientists and engineers. Contrary to prior theory and research, this study found boundary-spanning activities to be unrelated to job satisfaction. It was strongly related to perceptions of research and development team collaboration, job motivation, task uncertainty, locus of control, team cohesiveness, and individual productivity. The research reported here makes a strong case for including group processes and characteristics in future studies involving boundary-spanning activities. The results also give increased impetus to research which examines the relationships between boundary-spanning activities and individual productivity.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B000 892L 19/1 15/7

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Decision Risk Analysis on the Development of
the Rapidly Emplaceable Minefield Marking
System (REMMS).

(U)

DCT 74 BCP DeFilippis, Frederick ; Smith,
Jeffrey A. ;
REPT. NO. USAMERDC-2115
PROJ: DA-1-X-56469-D-016
TASK: 1-X-56469-D-01603

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 30 Sep 74. Other requests for
this document must be referred to Commander, Army
Mobility Equipment Research and Development
Center, Attn: STSFB-0, Fort Belvoir, Va.
22060.

DESCRIPTORS: (*Markers, *Minefields),
Emplacement, Decision making, Management planning
and control, Risk, Efficiency, Cost effectiveness,
Military requirements, Time dependence, Trade off
analyses, Uncertainty, Aerial delivery, Low
altitude, Hand held, Tactical analyses,
Compatibility, Aerial mines, Minelaying,
Decision theory

(U)

IDENTIFIERS: GATOR mine system, REMMS (Rapidly
emplaceable minefield marking system), RAPIDLY
emplaceable minefield marking system, Design, M-56
mines

(U)

A decision risk analysis was made to determine the
most cost-effective system to rapidly mark
minefields. The analysis considered guidance in
the Required Operational Capability (ROC) for
a Rapidly Emplaceable minefield Marking
System (REMMS). Further guidance concerning
operational needs was provided by the USAMC
Project Manager for Selected Ammunition.
Considering risk, cost, time, and operational
capability, it was concluded that the system should
include a hand-emplaced marker and a marker to be
dispensed from a GATOR Dispenser at a 50-foot
altitude at 90 knots that can be used with the
GATOR Rotary wing Mine Dispensing System
and the M56 Scatter Mine System.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B043 742L 9/2 15/3

CHARLES STARK DRAPER LAB INC CAMBRIDGE MA

Summer Study on Air Force Computer
Security (1979), 18 June-13 July 1979.

(U)

DESCRIPTIVE NOTE: Final rept.,
OCT 79 74P Dewolf, J. Barton :
Szulewski, Paul A. ;
REPT. NO. R-1326
CONTRACT: F49620-79-C-0060
PROJ: 2305
TASK: D3
MONITOR: AFDSR TR-80-0094

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Oct 79. Other requests for
this document must be referred to Director, Air Force
Office of Scientific Research, Attn: XDP.
Bolling AFB, DC 20302.

DESCRIPTORS: *Data processing security, *Computer
program verification, *Data management, Data bases,
Air Force operations, Command and control systems,
Global communication systems, Input output
processing, Risk, Delphi techniques, Mathematical
models, Kernel functions

(U)

The objectives of the study were to evaluate
current research and development in relation to Air
Force requirements for multilevel secure computer
systems, to identify critical research issues, and to
provide guidance and recommendations for future
research and development emphasis. To this end,
over 150 attendees representing academic, industrial,
civilian, government, and military organizations,
participated from June 18 through July 13 in an
intensive technology review and evaluation. The
study concluded that the field of computer security
research has made remarkable progress since the 1972
planning study sponsored by the Air Force
Electronics Systems Division (ESD). The
reference monitor concept recommended in that study,
and the resulting focus on mathematical models of
security policy, operating system kernels, and
verification has led to successful prototype
implementations of trusted operating systems.
Production versions of these trusted operating
systems are expected to be available soon, and steps (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-C012 367 15/3 5/1

ARMY WAR COLL CARLISLE BARRACKS PA

Priorities in Army Weapon Systems
Development.

(U)

DESCRIPTIVE NOTE: Student thesis.
MAR 70 83P Diller, Richard W. ;

UNCLASSIFIED REPORT

NOFORN

DESCRIPTORS: *weapon systems, *Resource management,
*Planning programming budgeting, *Army planning,
Army budgets, Military requirements, Ranking,
Allocations, Decision theory, Army equipment,
Cost effectiveness, Weapon system effectiveness,
Defense planning, Integrated systems, Theses
IDENTIFIERS: *Priorities, Zero base budgeting,
Threat evaluation, Risk analysis

(U)

(U)

As Army weapon systems become more complex and more costly, there is an ever-increasing need to concentrate resource allocation on priority needs and to be able to thoroughly justify the allocations. This thesis addresses the problem of establishing meaningful priorities for weapons systems development in the context of overall resource management. Recommendations are made for defining a dynamic and meaningful set of priorities which would relate weapon systems development to all other Army programs. It is estimated that, in 60-90 days, a small Army planning group could develop a priority ranking of approved and projected program elements defined over the current budget year and the succeeding 10-year period. The basic management tools that would be used are preference decision theory and a zero base concept for allocating each year's budget/program. The Five Year Defense Plan coding system, modified as needed, would provide the base accounting system. Once developed, the priority list would be kept up-to-date and serve as a basic guide for all Army planning and resource management. Weapon systems developers would derive their priority guidance from the basic priority list.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. DMN29N

AD- 915 106L 16/4.2 15/3.1

GENERAL RESEARCH CORP SANTA BARBARA CALIF

Leadtime and Risk Assessments for an
Intercept Feasibility Experiment. (U)

DESCRIPTIVE NOTE: Contract rept. Mar-Jul 73,
NOV 73 33P Dodson, E. N. ; Flueckiger,
W. D. ;
REPT. NO. GRC-CR-1-397
CONTRACT: DAH60-73-C-0037

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; 2 Oct 72. Other requests for
this document must be referred to Director, Army
Advanced Ballistic Missile Defense Agency,
Attn: RDMH-S, Arlington, Va. 22209.

DESCRIPTORS: (*Surface to air missiles, Antimissile
defense systems), Interceptors, Flight testing,
Lead time, Scheduling, Risk, Network flows,
Midcourse guidance, Guided missile fuzes, Homing,
Computer programming, Management planning and
control, Feasibility studies, Interactions (U)
IDENTIFIERS: Safeguard antiballistic missile
system (U)

In an extension of previous studies, an
experimental flight test program is evaluated in
terms of lead-times and schedule risk. The flight
test program is designed to assist in establishing
intercept (specifically, homing and fuzing)
techniques for a Midcourse Defense System
(MDS) capability. Two options are examined using
network analytic techniques. The program is
considered to have significant potential for schedule
slippage. The option with the lesser schedule risk
(Option A) also leaves unresolved several issues
which strongly influence the ultimate feasibility of
this defense concept. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B035 124L 17/7

B002-ALLEN APPLIED RESEARCH BETHESDA MD

Tactical Global Positioning System Guidance
(TGPSG) Risk Assessment and Military
Applications Study. Volume I. Technical
Discussion.

(U)

DESCRIPTIVE NOTE: Final rept. 16 May 77-1 Feb 78.

FEB 78 56P Drain, J. E.; Bassham, C.

N.; Stanton, T. S.;

REPT. NO. BAAR-9006-094-001-VOL-1

CONTRACT: F06635-77-C-0192

PROJ: 670B

TASK: 02

MONITOR: AFATL TR-78-29-VOL-1

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Feb 78. Other requests for
this document must be referred to Commander, Air
Force Armament Lab., Attn: DLMV, Eglin AFB,
AL 32542.

DESCRIPTORS: *Global positioning system, *Midcourse
guidance, *Cruise missiles, Navigation satellites,
Military applications, Risk, Assessment,
Jamming, Coding, Electronic counter
countermeasures, Pseudo noise systems, Tactical
analyses, Weapon delivery

(U)

IDENTIFIERS: PE63601F, WUAFATL67080224

(U)

A technical risk assessment program was established
for the TGPSG program. Design reviews, contractor
reports, and other data were screened to identify
high risk or problem areas. A card file of
equipment and procedure high risk areas was
established which identifies the problems, possible
solutions, and dates of problem identification or
problem occurrence. A risk assessment committee was
established and held periodic meetings to identify
high risk areas and discuss appropriate corrective
actions. The military requirements (RDC's, or
CR's, S and TO's) of all three services were
drawn upon to uncover promising applications for
TGPSG-like systems. The cruise missile was
identified as a potential user for TGPSG midcourse
guidance systems. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 6HN29N

AD-B000 129L 5/1 14/1

ABERDEEN PROVING GROUND MD MATERIEL TESTING
DIRECTORATE

Methodology Investigation, Risk/Cost
Benefits Associated with Elimination of R and
D Test Phases.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Aug 73-21 May 74,
JUN 74 221P Dye, John H. ;
REPT. NO. APG-MT-4475
PROJ: RDT/E-1-U-665702-D-625, USATECOM-9-CD-001-
000-052

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; Jun 74. Other requests for
this document must be referred to Commander, Army
Test and Evaluation Command, Attn: AMSTE-ME.
Aberdeen Proving Ground, Md. 21005.

DESCRIPTORS: (*Army research, *Cost
effectiveness), (*Test methods, Risk), Cost
analysis, Assessment, Methodology, Determination,
Deficiencies, Mathematical models, Efficiency,
Mathematical prediction, Questionnaires,
Defects(Materials), Elimination, Failure,
Data reduction, Benefits

(U)

IDENTIFIERS: Comparisons

(U)

A study was made at the US Army Aberdeen
Proving Ground to determine which research and
development test phases, if any, may be reasonably
eliminated based on risk/cost considerations. Test
data and results from past completed projects were
reviewed for evidence of predictable trends and
effects as to whether certain subtests were more or
less effective in disclosing deficiencies, for cost
of testing, and for means of quantifying for
comparative purposes the costs and risks of
consequences of fielding untested materiel. It was
concluded that past test data can be used to
establish trends and quantities of value in assessing
risks, however, future projection of consequences of
omitted tests in terms of cost and risk remain highly
subjective. Improvement is dependent on future
development of effective data banks, including
available feedback data from commodity users. It is
recommended that no further action be taken until
data collection, storage, and retrieval systems are (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A056 921 5/1 12/2

DECISIONS AND DESIGNS INC MCLEAN VA

Research on the Technology of Inference and
Decision.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 76-30 Sep 77,
NOV 77 39P Edwards, Ward ; John, Richard ;
Stillwell, William ;

CONTRACT: N00014-76-C-0074, ARPA Order-3052

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with
University of Southern California, Los Angeles,
CA, Social Science Research Inst., Rept. nos.
SSRI-77-6 and USC-01855-6-T.

DESCRIPTORS: *Decision making, *Decision theory,
Risk, Group dynamics, Human relations,
Mathematical models, Response, Scaling factors,
Probability distribution functions, Validation,
Computerized simulation, Monte Carlo method,
Behavioral science, Judgement (Psychology),
Regression analysis, Least squares method,
Reports

(U)

IDENTIFIERS: *Inference, Inference behavior,
Uncertainty

(U)

This report summarizes twelve months of research on the technology of inference and decision. Theoretical research and experimental work on three major topics: elicitation of subjective probabilities, multi-attribute utility theory, and the application of decision technology, is discussed. Experimental work showed that simple averaging of individual's probability judgments to form a group judgment did not differ significantly from behavioral interaction in final quality of the judgments as evaluated by a quadratic scoring rule. Other experimental work indicated that elicitation techniques were of significant importance to the quality of judgments. Response scales were found to affect both the magnitude and veridicality of probabilistic judgment. In the assessment of subjective probability distributions elicitation technique was found to interact with the type of distribution used to generate the data in that biases introduced in subjective probability distributions varied as a function of the uncertain quantity being (U)

University of Southern California
A Criterion Validation of Multi-
attribute Utility Analysis and of
Group Communication Strategy

DESCRIPTIVE NOTE:

Organizational Behavior and
Human Performance 1980
Eils, Lee C., III
John, Richard S.

This study investigates the use of an external criterion for validating additive utility assessments under certainty. Utilities were elicited from 24 groups via consensus judgment for 10 hypothetical applicants for bank credit cards. The research design completely crossed two factors relevant to group utility assessment: (1) using a decomposition (MAUA) procedure or not, and (2) using a formal group communication strategy or not. The quality of each group's utility judgments was defined to be the Pearson product-moment correlation between the group's judged utilities and utilities output from a configural (non-linear) model used by Security Pacific National Bank in evaluating applicants for Master Charge. Group satisfaction measures were also obtained. The decomposition methodology and the group communication strategy both aided groups in making assessments that are more consistent with those of the bank model, which is based on a systematic collection and interpretation of a large amount of relevant data. Simplified procedures for obtaining weight parameters in the multiattribute utility analysis yielded better overall utilities than more complicated ratio-estimation techniques.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B042 728L 1/3 1/2 15/5 14/1

DOUGLAS AIRCRAFT CO LONG BEACH CA

New Strategic Airlift Concepts. Volume
III. Risk Analysis.

(U)

DESCRIPTIVE NOTE: Final rept, May 78-Feb 79,
JUN 79 76P Eliel, L. F.; Hull, R.
E.; McWilliams, J. W.; Newton, Floyd C.;
Platte, M. M.;
REPT. NO. MDC-J8355-VOL-3
CONTRACT: F33615-78-C-3017
PROJ: 2404
TASK: 01
MONITOR: AFFDL TR-79-3062-VOL-3

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Jul 79. Other requests for
this document must be referred to Director, Air Force
Flight Dynamics Lab., Attn: FXB, Wright-
Patterson AFB, OH 45433.

SUPPLEMENTARY NOTE: See also Volume 5, AD-B042
724L.

DESCRIPTORS: *Jet transport planes, *Aeronautical
engineering, *Airlift operations, Risk, Cost
analysis, Operational effectiveness, Forecasting,
Computerized simulation, Takeoff, Aerodynamic
lift, Coefficients, Lift to drag ratio, Fuel
consumption, Figure of merit, Airships, Turbofan
engines, Turboprop engines, Gliders, Aircraft
nuclear propulsion, Tables (Data)

(U)

IDENTIFIERS: Aircraft design, C-5 aircraft, Wing
in ground effect, PE62201F, WUAFFDL24040136

(U)

The primary objective of this study was the
definition of future strategic airlift vehicle
concept options and the technologies required for
successful operational implementation. The
definitions include vehicle characteristics,
operations, features, and figures of merit reflecting
the relative effectiveness and cost implications of
the vehicle concept options. Configuration
concepts considered in this study include: advanced
turbofan and turboprop-powered (propfan) conventional
wing-body arrangements, a derivative of the C-5(H)
with an advanced-technology wing and propulsion
system, a nuclear powered vehicle, a wing-
distributed-load vehicle, a waterborne vehicle,

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A034 595 15/5

NAVY FLEET MATERIAL SUPPORT OFFICE MECHANICSBURG PA
OPERATIONS ANALYSIS DEPT

Analysis of Proposed Initial Stocking
Policies.

(U)

DEC 76 54P Engelman, J. L. ;
REPT. NO. 116A

UNCLASSIFIED REPORT

DESCRIPTORS: *Inventory analysis, *Inventory
control, Policies, Cost effectiveness, Naval
logistics, Mathematical models, Spare parts,
Military requirements, Naval equipment, Abundance,
Threshold effects, Lead time, Mathematical
prediction, Stockpiles, Repair, Risk analysis
IDENTIFIERS: Variable threshold rule,
Availability

(U)

(U)

DODI 4140.42 establishes policy for the
determination of initial requirements for secondary
item spare and repair parts. DODI 4140.42 also
authorizes alternative models whose objective is to
minimize time-weighted requisitions short. The
Variable Threshold Rule, an alternative initial
stockage model developed for the Navy, has been
approved as an acceptable substitute for the DOD
model. This study compares the performance of the
current UICP risk model (which meets the
alternative model criteria) with the Variable
Threshold Rule, the DODI rules, and the current
stocking criteria. The study shows that the
Variable Threshold and the UICP policies are
both more cost-effective than the DOD model, but
the Variable Threshold is more flexible and
easier to implement. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A018 961 13/10 5/1 15/5

CALIFORNIA UNIV LOS ANGELES SCHOOL OF ENGINEERING AND
APPLIED SCIENCE

PERA (CV) Project Risk Management. (U)

JUN 74 34P Feiler, A. M. ; Jorges, Glen

REPT. NO. UCLA-ENG-7445
CONTRACT: N00014-69-A-0200-4052

UNCLASSIFIED REPORT

DESCRIPTORS: *Aircraft carriers, *Maintenance,
*Management planning and control, *Risk analysis,
Scheduling, Allocations, Configuration management,
Decision making, Repair, Uncertainty (U)
IDENTIFIERS: TRANSIM 4 model, *Network
analysis(Management), CVA-67 vessel, PERT (U)

This report describes the application of TRANSIM
IV, a probabilistic network analysis technique, to
planning, scheduling and allocation of PERA
(Planning and Engineering for Repair and
Alterations) (CV) resources in connection with
aircraft carrier overhaul and repair. The PERA
(CV) application project was a joint undertaking
between the UCLA Project TRANSIM staff and the
PERA (CV) staff. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A036 335 5/1 9/2

CALIFORNIA UNIV LOS ANGELES SCHOOL OF ENGINEERING AND
APPLIED SCIENCE

Project Management through Simulation. (U)

DEC 76 44P Feiler, A. M. ;
REPT. NO. UCLA-ENGR-75-119
CONTRACT: N00014-76-C-0112

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control,
*Systems analysis, *Critical path methods,
*Computerized simulation, *Risk analysis, *Network
analysis(Management), Models, Simulation (U)
IDENTIFIERS: Project management,
Models(Simulations), Deterministics (U)

The role of critical path network analysis in
project management is discussed. Specific
shortcomings of conventional, deterministic network
analysis techniques are outlined and examples are
given of the individual factors which contribute to
the overall optimism of deterministic analysis.
Computer simulation is offered as means of
developing realistic schedules, budgets and resource
requirements for projects where uncertainty and
performance variability are of significance.
(Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A045 758 12/2

PENNSYLVANIA STATE UNIV UNIVERSITY PARK COLL OF BUSINESS
ADMINISTRATION

A Survey of Multiattribute/Multicriterion
Evaluation Theories.

(U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 77 BOP Fishburn, Peter C. ;
REPT. NO. TR-26
CONTRACT: N00014-75-C-0857

UNCLASSIFIED REPORT

DESCRIPTORS: *Decision theory, *Goal programming,
Utilization, Decision making, Risk analysis,
Bias, Assessment, Methodology, Criteria,
Stochastic processes, Dominance models, Economic
analysis

(U)

IDENTIFIERS: WUNR047112

(U)

This report provides a comprehensive survey of theories for the evaluation of decision alternatives and/or consequences of decision that are characterized by a number of attributes or performance criteria. The evaluation theories are classified under a certainty/risk/uncertainty trichotomy and include varieties of utility theory, noncompensatory preference structures, theories of stochastic dominance, theories of risk, and many others. More than 300 references are provided, about half of which have appeared after 1970. The survey also discusses various choice models for multiattribute/multicriterion situations and includes a concluding section on assessment methodology.
(Author)

(U)

Pennsylvania State University
University Park College of
Business--ETC
Stochastic Dominance Without
Transitive Preferences
DESCRIPTIVE NOTE:
September, 1977
Fishburn, P. C.

Theory Versus Practice in Risk
Analysis: An Empirical Study:
A Comment

DESCRIPTIVE NOTE:
The Accounting Review
July, 1976
Volume LI, Number 3
Fishburn, Peter C.

This article presents a
discussion of utility theory
and points out some
potential error in conclusions
drawn by W. Greer in an
earlier article in The
Accounting Review.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B036 665L 16/4.2

ARMY MISSILE RESEARCH AND DEVELOPMENT COMMAND REDSTONE
ARSENAL AL PLANS AND ANALYSIS DIRECTORATE

Risk Assessment Update of Stinger-Post
Engineering Development Program.

(U)

DESCRIPTIVE NOTE: Technical rept.,

DEC 78 22P Foster, L. E. ; Painter, B.

N. ; Pickens, D. E. ;

REPT. NO. DRDMI-D-79-1

PROD: 1P665898MM66

TASK: 00

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;

Test and Evaluation: Dec 78. Other requests for

this document must be referred to Commander, Army

Missile Research and Development Command, Attn:

DRDMI-T1, Redstone Arsenal, AL 35809.

DESCRIPTORS: *Risk, *Surface to air missiles.

Checkout procedures, Scheduling, Probability

density functions, Systems engineering, Networks

(U)

IDENTIFIERS: WUGO, ASM66, PE65898A

(U)

This report represents an update of the Schedule

Risk Assessment performed by the STINGER-POST

Technical Evaluation Committee. The Risk

Analysis Team of the STEC performed technical,

schedule, and cost assessments of the STINGER-POST

Engineering Development program which represented

the Government position to evaluate contractor

proposals. This report represents an update of the

Schedule Risk Assessment and considers

completion of some of the activities performed within

the past 15 months.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B044 751L 16/4.2 5/1

ARMY MISSILE COMMAND REDSTONE ARSENAL AL PLANS ANALYSIS
AND EVALUATION DIRECTORATE

Risk Assessment Update of Stinger-POST
Engineering Development Program.

(U)

DESCRIPTIVE NOTE: Technical rept.,
OCT 79 20P Foster, L. E. ;
REPT. NO. DRSMI/D-80-1

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 17 Oct 79. Other requests for
this document must be referred to Commander, Army
Missile Command, Attn: DRSMI-RPT, Redstone
Arsenal, AL 35809.

DESCRIPTORS: *Surface to air missiles, *Test and
evaluation, *Risk, Army planning, Costs,
Scheduling, Management, Contractors

(U)

IDENTIFIERS: STINGER POST Engineering
Development Program, STATNET, STEC(Stinger-
POST Technical Evaluation Committee)

(U)

This report represents an update of the Schedule
Risk Assessment performed by the STINGER-POST
Technical Evaluation Committee of the US Army
Missile Research and Development Command on
11 March 1977. The Risk Analysis Team of
the STEC performed technical, schedule, and cost
assessments of the STINGER-POST Engineering
Development program which represented the
Government position to evaluate contractor
proposals. Subsequently, a contract was let to
General Dynamics on 28 June 1977. This report
represents an update of the Schedule Risk
Assessment and considers completion of activities
performed between 28 June 1977 and 1 September
1979. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 785 438 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Cost Growth Model for Weapon System
Development Programs.

(U)

DESCRIPTIVE NOTE: Master's thesis.

AUG 74 133P Glover, William L. ; Lenz,

John O. ;

REPT. NO. SLSR-22-74B

UNCLASSIFIED REPORT

DESCRIPTORS: *Military procurement, *weapon systems,
*Costs, Logistics planning, Uncertainty, Risk,
Statistical analysis, Mathematical models,
Theses

(U)

IDENTIFIERS: Growth models

(U)

Much attention has been placed on cost growth in
military weapon system acquisitions. The reasons
for cost growth can be related to uncertainty
relative to program costs, delivery dates and product
reliability. A conceptual model has been developed
to cope with the uncertainties in weapons acquisition
programs. The model relates the concepts of
entropy, information, uncertainty and costs,
predicting final costs based on a measure of
uncertainty, synonymous with risk in this study.
The measure of uncertainty is entropy, or the lack
of order in the information available to the program
manager. The model expresses final costs as the
ratio of initial cost estimates to program entropy.
The authors develop and refine the model for
application to weapon development programs.
(Modified author abstract)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 8HN29N

AD-A021 677 15/5 5/1

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

A Monte Carlo Risk Analysis of Life
Cycle Cost Prediction.

(U)

DESCRIPTIVE NOTE: Master's thesis.

SEP 75 186P Graves, Samuel B. ;

REPT. NO. GOR/SM/75D-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Life cycle costs, *Logistics support,
*Risk, Contracts, Mathematical prediction,
Maintenance, Analysis of variance, Reliability,
Probability density functions, Theses, Simulation,
Monte Carlo method, Jet fighters

(U)

IDENTIFIERS: *Incentive contracts, F-16
aircraft

(U)

This study is an investigation of the uncertainties involved in the prediction and measurement of Life Cycle Costs. The particular treatment here analyzes Logistic Support Costs, which are a subset of the Life Cycle Costs. The Logistics Supportability Incentives which are embodied in the current General Dynamics F-16 contract are analyzed in the light of the stochastic uncertainties of prediction and measurement of Logistic Support Cost. A Monte Carlo Simulation model is developed which will approximate the uncertainties involved in obtaining a sample measurement of Logistic Support Cost in a fixed length test. The model output is applied to the problems of determining appropriate Contractor rewards or penalties, investigating the feasibility of contractor strategies, and investigating the effect of various test lengths.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A032 536 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Methodology for Subjective Assessment of
Probability Distributions. (U)

DESCRIPTIVE NOTE: Master's thesis.
SEP 76 157P Grayson, Anthony S. ;Lanclos,
Harold J. ;
REPT. NO. SLSP-13-76E

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement, *weapon
systems, Cost estimates, Probability, Risk, Air
Force planning, Methodology, Theses, Systems
management, Logistics management (U)

In the initial stages of development of a weapon
system it is impossible to know with complete
certainty what the final outcome of the weapon system
will be in terms of completion time, costs, and
performance. The authors describe the following
techniques for assessing subjective probability:
Choice-Between-Camples, Standard Lottery,
Modified Churchman-Ackoff, Delphi,
DeGroot Consensus, and Direct Estimation.
The following criteria are being used: ease of
application, adaptability and flexibility,
reliability and validity, time, removal of bias, and
miscellaneous. Based upon the content analysis, the
Standard Lottery technique is the technique which
best assesses the magnitude of uncertainty present in
a given weapon systems's development effort. (U)

The Effects of Three Social Decision
Schemes on Decision Group Process
DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance
25, 97-106 (1980)
Green, Stephen G.; Taber, Thomas D.

An experimental study compared the effects of three group decision-making schemes. A nominal voting scheme produced the highest satisfaction with the group decision-making process, and the lowest amount of expressed negative socio-emotional behaviors, but also produced the lowest feelings of personal participation. A consensus scheme produced nearly the opposite results - with high felt participation, but also a high degree of negative socio-emotional behaviors, and low satisfaction with the group decision-making process. Apparently, the more structured nominal voting scheme reduces the interpersonal give-and-take that can lead to negative socio-emotional behavior, but that also gives a feeling of participation.

Theory Versus Practice in Risk
Analysis: An Empirical Study
DESCRIPTIVE NOTE:
The Accounting Review
July, 1974
Volume 49, Number 3
Greer, Willis R., Jr.

There appears to be substantial conflict between the decision processes used by actual decision makers and existing utility theory. The conflict seems to center around the inability of classical utility theory to deal effectively with situations where one or more contingent outcomes for a project are lower than some critical amount. Existing theory, therefore, incorrectly models practice.

Contributing factors in the apparent conflict may be internal inconsistency and a tendency decision makers have to be more averse to risk at the time of actual choice than their pre-decision statements would indicate.

Synergism in Group Decision Making
(How to Make the Whole Greater than
the Sum of the Parts)

DESCRIPTIVE NOTE: Personnel
Journal

Volume 58, No. 1: 12 and 13

Hall, Dr. Jay

This article gives some guidelines
for use by individuals to use when
operating as part of a group to
achieve consensus.

Synergy
DESCRIPTIVE NOTE: Manage
April, 1979
Hall, Dr. Jay

This article discusses various aspects of group decision making. As a result of a number of experiments involving decisions made by groups, Dr. Hall offers several guidelines to be used by group members in achieving a consensus.

Graduate School of Business Administration
The University of Michigan
Why Risk Analysis Isn't Working
DESCRIPTIVE NOTE: Long Range Planning
Volume 8, December, 1975
Hall, William K.

In this article the author argues that despite its popularity among researchers and managers alike, Risk Analysis as a management tool has not been successful. He postulates that in the end managers will give up attempting to make formal analysis of risks, substituting more effective means of living with the "results" of those risks as they arise.

The Multi-dimensional Aspects of
Risk

DESCRIPTIVE NOTE: The Journal
of Portfolio Management
Summer 1979
Hayes, Douglas A.

This article presents a discussion
of risk as it relates to portfolio
theory. The concept of considering
risk as multi-dimensional when
attempting to apply risk analysis
to portfolio management is discussed.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A038 779 15/5 12/1

NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A Statistical Analysis of the Effectiveness
of Program Initial Conditions as Predictors
of Weapon System Acquisition Program
Success.

(U)

DESCRIPTIVE NOTE: Master's thesis,
DEC 76 90P Henry, Douglas Davies :

UNCLASSIFIED REPORT

DESCRIPTORS: *Weapon systems, *Military procurement,
*Statistical analysis, Management planning and
control, Risk analysis, Cost overruns,
Predictions, Scheduling, Correlation techniques,
Test and evaluation, Inflation(Economics),
Uncertainty, Development tests, Factor analysis,
Systems management

(U)

This thesis examines the relationship between
weapon system acquisition program's initial
conditions (project size, technical risk and
program length) and program outcomes in the areas
of cost, performance, and schedule. The study
employs a nonparametric correlation procedure and
Mann-Whitney U Tests as the principal
analytic tools of the examination process. The
results of the analysis indicate that a definite
relationship between cost/schedule growth and program
size exists. In a significant number of cases,
large programs incurred greater absolute cost growth
with less schedule slippage than did programs of
smaller size. The variance in project technical
performance is largely unexplained by the
methodology, although there are indications that it
is related inversely to program length.

(Author)

(U)

Defense Systems Management College
Risk Aversion VS. Technology
Implementation
DESCRIPTIVE NOTE:
November, 1977
Hersh, M. H.

Risk Analysis in Capital
Investment
DESCRIPTIVE NOTE:
Harvard Business Review
September-October, 1979
Volume 57
Hertz, David

How can business executives make the best investment decisions? Is there a method of risk analysis to help managers make wise acquisitions, launch new products, modernize the plant, or avoid overcapacity? "Risk Analysis in Capital Investment" takes a look at questions such as these and says "yes"-by measuring the multitude of risks involved in each situation. Mathematical formulas that predict a single rate of return or "best estimate" are not enough. The author's approach emphasizes the nature and processing of the data used and specific combinations of variables like cash flow, return on investment, and risk to estimate the odds for each potential outcome. Managers can examine the added information provided in this way to rate more accurately the chances of substantial gain in their ventures. The article, originally presented in 1964, continues to interest HBR readers, the more than 153,000 reprints sold since then testify to the importance of this type of thinking on investment analysis. In a retrospective commentary, the author discusses the now routine use of risk analysis in business and government, emphasizing that the method can-and should-be used in any decision-requiring situations in our uncertain world.

Brigham Young University
Group Risk Taking In Military
Discussions

DESCRIPTIVE NOTE: The Journal
of Social Psychology, 1972, 88, 55-64
Higbee, Kenneth L.

Research on the risky-shift effect has indicated that groups are more risky than individuals. Since many decisions involving military and international policy are made by groups, some authors have warned us of the potentially dangerous effects of the risky shift in these areas, where increased risk might work against our best interests. However, most risky-shift research has used as a measure of risk the Choice-Dilemma Questionnaire (CDQ), a paper-and-pencil measure of hypothetical risk taking. Thus, the validity of generalizations from risky-shift findings to real-world military settings would be affected by the extent to which riskiness on the CDQ reflects riskiness in such settings. Two-man groups of male college students (assigned on the basis of similar CDQ scores) participated in a simulated international conflict. Subjects' CDQ scores were not related either to the actual level of riskiness of their military decisions, or to their perceived level of riskiness. Generalizations to real-world military decision making from risky-shift studies using the CDQ may not be warranted on the basis of currently available evidence, since the CDQ may not reflect actual military riskiness in the real world.

The Retail Buying Committee:
A Look at Cohesiveness and
Leadership

DESCRIPTIVE NOTE:

Journal of Retailing
Volume 55, Number 4
Winter, 1979
Hutt, Michael D.

Effective marketing strategy design requires a knowledge of buyer behavior at both the consumer and channel levels. Only limited research has been invested in studies of new-product buying in a channel context. Operationally, this segment is pivotal in determining the ultimate success or failure of the product. This study examines a particular form of organizational decision making-the retail buying committee.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 715 394 15/5 12/2

ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Analysis of Risk for the Materiel Acquisition
Process. Part I. Fundamentals. (U)

DESCRIPTIVE NOTE: Final technical rept.,
NOV 70 76P Hwang, John D. ;
REPT. NO. SY-R6-70

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMY EQUIPMENT, INVENTORY CONTROL),
(*DECISION THEORY, PROBABILITY), STATISTICAL ANALYSIS,
ARMY PROCUREMENT, COST EFFECTIVENESS, INTEGRALS, RANDOM
VARIABLES, MANAGEMENT PLANNING AND CONTROL, SIMULATION(U)
IDENTIFIERS: RISK, RISK FUNCTIONS, STATISTICAL
DECISION THEORY, SYSTEMS ANALYSIS, COMPUTERIZED
SIMULATION (U)

The paper is the first in a series devoted to the subject of analysis of risk for the materiel acquisition process. The objective of this introductory paper is three-fold. First, risk analysis is structured to show that it has close affinity to systems analysis and adds a new dimension, in terms of a probability measure, to integrate the three dimensions of cost, time to complete, and performance of a program in the materiel acquisition process. Secondly, numerous applicable techniques of statistical decision theory are presented, plus decision tree analysis and subjective judgment collection. Thirdly, methods for risk analysis of the concept formulation and contract definition phases of the acquisition cycle are exhibited. Research problems are also mentioned for future investigative efforts. Significant payoffs from a risk analysis include the identification of high risk areas, recommendations of additional studies to fill data gaps for better management decision making, a better basis for budget allocation, as well as the discovery of additional program alternatives. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 747 365 15/E 12/2

ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIV

Analysis of Risk for the Materiel Acquisition
Process. Part II. Utility Theory.

(U)

DESCRIPTIVE NOTE: Final rept.,

MAY 71 43P Hwang, John D. ;
REPT. NO. SY-R2-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Nov 70. AD-
715 394.

DESCRIPTORS: (*ARMY EQUIPMENT, INVENTORY CONTROL),
(*DECISION THEORY, STATISTICAL ANALYSIS), ARMY
PROCUREMENT, DECISION MAKING, COST EFFECTIVENESS, GAME
THEORY, PROBABILITY DENSITY FUNCTIONS, THEOREMS

(U)

IDENTIFIERS: RISK, STATISTICAL DECISION THEORY,
SYSTEMS ANALYSIS, UTILITY FUNCTIONS

(U)

The paper is devoted to the subject of analysis of
risk for the materiel acquisition process. It is
emphasized that risk analysis must interface with
decision analysis to facilitate decision-making for
major developmental programs. A concise discussion
of utility theory, lotteries, and techniques to
elicit utility functions is presented, as well as a
set of utility axioms. The concepts are used for
the decision analysis of a hypothetical example.
(Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B002 031 17/2 12/2

MARTIN MARIETTA AEROSPACE ORLANDO FLA COMMUNICATIONS AND
ELECTRONICS DIV

Integrated Tactical Communications System
(INTACS). Task III. Communications System
Effectiveness and Cost Methodology
Development.

(U)

DESCRIPTIVE NOTE: Final rept.

APR 74 240P

REPT. NO. OR-12822-1

CONTRACT: DAAG39-73-C-0248

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Task 4 Supplement dated
Dec 74, AD-B002 032L.

DESCRIPTORS: (*Tactical communications, Integrated
systems), Army, Systems analysis, Methodology,
Cost effectiveness, Communications networks,
Systems engineering, Computerized simulation, Cost
analysis, Risk, Sensitivity, Trade off analyses

(U)

IDENTIFIERS: MRTF(Mid Range Time Frame),
Mid range time frame

(U)

The cost and effectiveness methodology developed in
Task III of the INTACS program offers a direct,
dependable, and flexible means for evaluating the
capabilities and cost of the candidate mid range time
frame Army communications systems concerned. At
the same time, it constitutes an effective tool for
ranking these systems further on the basis of
technological risk. Thus, the methodology developed
will facilitate the selection of a preferred system
as intended. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A007 276 12/2 5/1

CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER

Planning and Control under Risk.

(U)

DESCRIPTIVE NOTE. Final rept. 16 Jun 71-30 Jun 74.
JUN 74 10P Jewell, William S.; Oliver,

Robert M.; Ross, Sheldon M.;

CONTRACT: DA-31-124-ARO-D-331

PROJ: DA-2-0-014501-B-14-C

MONITOR: ARO 5307.86-M

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control.
*Risk. Dynamic programming. Stochastic processes.
Mathematical models. Bayes theorem.
Computations

(U)

A variety of different research efforts have been supported in the past three years. This research falls in the following areas: (1) Theory and computation of optimal policies in dynamic programming risk problems; (2) Applied stochastic processes; (3) Development of models for institutional operating policies; and, (4) Linearized Bayesian estimation models. A summary of the research effort in each of the above areas is presented.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A037 013 12/2 5/1

CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER

Planning and Control under Risk. (U)

DESCRIPTIVE NOTE: Final rept.,

AUG 76 31P Jewell, William S. ;

CONTRACT: DAGC04-75-G-0163

MONITOR: ARD 12549.17-M

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control, *Risk analysis, Decision making, Stochastic processes, Problem areas, Data acquisition, Estimates, Optimization, Policies, Bayes theorem, Mathematical models (U)

IDENTIFIERS: Credibility (U)

This report describes work in the modelling of stochastic phenomena and the development of decision-making techniques under risk and uncertainty. Research areas which received major emphasis were (1) Basic risk decision models, with emphasis on determining the structure of optimal policies and examining the implications of different risk objectives; (2) Problems of data collection, estimation, and updating for realistic decision models. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N
AD-A055 055 12/2 5/1 5/10
CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER
Planning and Control Under Risk. (U)
DESCRIPTIVE NOTE: Final rept. 1 Nov 76-Nov 77,
 NOV 77 29P Jewell, William S. ;
CONTRACT: DAAG29-77-G-0040
MONITOR: ARO 14240.7-M

UNCLASSIFIED REPORT

DESCRIPTORS: *Operations research, *Management
planning and control, *Decision making, Risk,
Bayes theorem, Stochastic processes, Military
operations, Estimates, Mathematical models,
Probability, Decision theory, Parametric analysis,
Data acquisition (U)

This is the Final Report in a twelve-year
effort to model stochastic phenomena and develop
decision-making techniques under risk and
uncertainty. Recent research areas which received
major emphasis were: (1) Basic risk decision
models, with emphasis on determining the structure of
optimal policies in the face of unknown parameters in
the relevant risk distributions; and (2) Data
collection and parameter estimation with emphasis on
linearized Bayesian methods. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BMN29N

AD-A045 771 5/10

DECISIONS AND DESIGNS INC MCLEAN VA

Prospect Theory. An Analysis of Decision Making Under Risk.

(U)

DESCRIPTIVE NOTE: Technical rept.,

APR 77 43P Kahneman, Daniel ;Tversky,

Amos ;

CONTRACT: N00014-76-C-0074. ARPA Order-3052

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with Perceptronics, Inc. Eugene, OR. Decision Research Branch, Rept. no. PTR-1042-77-4.

DESCRIPTORS: *Decision making, *Risk, *Decision theory, Psychology, Mathematical models, Theory,

(U)

IDENTIFIERS: Prospect theory, Decision analysis

(U)

The theoretical basis of decision analysis is utility theory, which describes the principles upon which people wish to base their decisions. This article questions the validity of utility theory and offers an alternative, 'prospect theory.' In addition to providing evidence in support of prospect theory, this paper discusses its implications for the theory and practice of decision analysis. It suggests, for example, ways in which subtle changes in elicitation procedure can have marked effects on people's expressed values. (Author)

(U)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER 18 ESD-TR-79-42	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) A New Design for the Programmable Button System at the GEODSS ETS	5. TYPE OF REPORT & NUMBER COVERED 9 Project Report 1	
7. AUTHOR 14 Lawrie E. Eaton	8. CONTRACT OR GRANT NUMBER(s) 15 1-19628-78-C-4462	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Lincoln Laboratory, M.I. I. P.O. Box 73 Lexington, MA 02173	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Program Element No. 63428F Project No. 2128	
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	16a. DECLASSIFICATION DOWNGRADING SCHEDULE	

ABSTRACT

Two new design approaches are presented for upgrading the programmable button interface at the GEODSS ETS. These designs make use of the Motorola microprocessors. The design simplifies the logic, standardizes the interface to the host computer and provides increased versatility with the microprocessor software.

This document assumes the reader is familiar with the GEODSS Experimental Test System (ETS) and its basic operational configuration.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 767 871 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

Risk Assessment. (U)

DESCRIPTIVE NOTE: Master's thesis,
JUN 73 180P Lenox, Hamilton T. ;
REPT. NO. GSA/MA-73-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY PROCUREMENT, UNCERTAINTY),
STATISTICAL ANALYSIS, DECISION THEORY, PROBABILITY
DENSITY FUNCTIONS, COSTS, ECONOMICS, SYSTEMS
ENGINEERING, THESES (U)
IDENTIFIERS: *RISK, BAYES THEOREM, PARAMETER
ESTIMATION, NETWORK ANALYSIS(MANAGEMENT) (U)

Risk assessment became an integral part of the
DDC system acquisition process in 1969. The
primary effort of the paper was directed at exploring
past attempts to quantify risk, and while the
qualitative measurement of risk is mentioned, it is
not explored in any depth. An attempt is made to
define or describe the manner in which risk analysis
varies throughout the system acquisition life cycle
and a methodology using Bayes' Theorem is
presented for the quantification and updating of risk
in an on-going program. The methods of estimating
parameters and their usefulness in a formal
analytical process are discussed. The probability
density function best transmits the uncertainty
associated with an estimate and lends itself more
readily to the analytical techniques than other
methods of estimation. (Modified author
abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-8034 709L 14/1 5/1

ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND ST LOUIS
MO

Total Risk Assessing Cost Estimate
(TRACE), an Evaluation. (U)

DESCRIPTIVE NOTE: Interim rept.,
FEB 79 48P Lilje, Ralph W. ;
REPT. NO. USAAVRADCOM-TR-79-8

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Contractor Performance Evaluation; Feb 79. Other
requests for this document must be referred to Commander,
Army Aviation Research and Development Command.
Attn: DRDAV-BCD, P.O. Box 209, St. Louis,
MO 63166.

DESCRIPTORS: *Cost estimates, *Research management,
*Risk, Cost analysis, Computerized simulation,
Computer programs, Parametric analysis, Time
series analysis, Catastrophic conditions, Decision
making, Methodology, Probability (U)
IDENTIFIERS: Sensitivity analysis (U)

This report discusses the need for cost realism in
the estimates for Research and Development (R
and D) programs, the management reserve as one
method previously used to manage cost growth, some of
the objections that have been raised concerning the
use of the management reserve, the historical
implementation of the Total Risk Assessing
Cost Estimate (TRACE) which was developed at
least partially in response to those objections, and
the relationship of TRACE to other cost estimates
such as the Baseline Cost Estimate (BCE) and
the Independent Parametric Cost Estimate
(IPCE). The report also describes several methods
for developing a TRACE, some of which have not been
proposed previously. But in so doing, it is not the
intention of this report to provide a handbook or
manual describing how to prepare a TRACE in detail.
Rather, this report presents a critical appraisal
of the TRACE program wherein several observations
are made, some of which are based upon actual
experience at AVRADCOM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 729 223 15/5 14/1 12/2

AIR FORCE ACADEMY COLO

Final Report of the USAF Academy Risk
Analysis Study Team.

(U)

AUG 71 121P Lochny, Robert R. ; Hensley,
R. D. ; Flammen, Philip ; Smith, Donald R. ;
Head, Richard G. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMED FORCES PROCUREMENT, *COST
EFFECTIVENESS), PROBABILITY, MANAGEMENT ENGINEERING,
WEAPON SYSTEMS, UNCERTAINTY
IDENTIFIERS: *RISK

(U)

(U)

The study investigates a method of reducing cost growth and improving quality in the weapon system acquisition process. It investigates a new management process, 'formal risk analysis.' Risk is the probability that a project will not be completed within specified time, cost and performance constraints by following a specified course of action. Risk assessment is an estimate of the risk associated with a particular course of action. Risk management is the generation of alternative courses of action for reducing risk. Risk analysis is the larger process of combining risk assessment and risk management in order to examine factors affecting the risk of acquiring a system. It is the purpose of the study to identify what a risk analysis is, how it can be accomplished, who should accomplish it and where it fits in the management structure for weapons systems acquisition.

(Author)

(U)

Factors Affecting Adoption Of A
Quantitative Method For R and D
Project Selection
DESCRIPTIVE NOTE:
Management Science
Volume 21, No. 2, October 1974
Maher, P. Michael; Rubenstein, Albert H.

In the field of research and development (R and D), "state-of-the-art project selection models are not being widely adopted. This paper reports on the results of an attempt to develop, test and evaluate systematically an R and D project selection technique in an operating R and D organization. The technique employed was a modified risk analysis model. The results suggest that an individual's assessment of the value of the data generated by an R and D project selection technique is an extremely important factor in determining his willingness to adopt the technique. The relative importance of two determinants of adoption: perceived changes in organizational processes resulting from the use of a project selection model and the importance of the strategies used to introduce a model into an organization, appear to run counter to the thinking of many management theorists who tend to emphasize the importance of the organizational process and the importance of the strategy for change.

VERT:

A Risk Analysis Tool for Program Management

DESCRIPTIVE NOTE: Defense Management
Journal

May-June, 1979

Mann, Greg A., Major, USAF

An Analysis of Group Decisions
Involving Risk ("The Risky Shift")
DESCRIPTIVE NOTE:

Human Relations
Volume 22, Number 5
pp 381-395
Burnstein, Eugene

This article presents an analysis
of the conditions under which
groups in a laboratory situation
commit themselves to a goal,
demands extraordinary effort
or skill and whose probability
of achievement is not high.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A035 482 5/1 5/3 15/3

OKLAHOMA UNIV NORMAN

A Conceptual Cost Model for Uncertainty
Parameters Affecting Negotiated, Sole-
Source Development Contracts.

(U)

DESCRIPTIVE NOTE: Doctoral thesis,
71 201P Martin, Martin Dean ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract proposals, *Cost models,
Weapon system effectiveness, Uncertainty, Economic
analysis, Cost overruns, Risk analysis,
Negotiations, Military procurement, Defense
planning

(U)

IDENTIFIERS: Sole source contracts

(U)

Attention was placed on cost growths as related to the acquisition of weapons systems by the military services. Uncertainties exist relative to program costs, delivery dates, and product reliability. The purpose of this study is to construct a model which will assist in coping with uncertainties affecting cost. Research and development procurement is unique. A goal is purchased, not a hardware item. Vague specifications may cause contract costing problems. The weapons acquisition process encompasses concept formulation, contract definition, engineering development, and production and operation. As a scientific concept traverses the continuum from concept formulation to production, uncertainties are reduced. For this study, uncertainty cannot be distinguished from risk. Uncertainty may be classified as either anticipated for unanticipated. Each of these is classified as either exogenous or endogenous. Uncertainty is the absence of information, which may be thought of as a commodity. In this capacity, information may be described and measured. Information gleaned from the internal and external environments will permit the reduction of uncertainty. The military services have attempted to cope with uncertainty by the use of incentives and contractual arrangements. The relationship between the entropy, information, uncertainty, and cost parameters enables a conceptual cost model to be developed. Entropy is a measure of information in a system. The term refers to

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A026 681 19/6 12/2

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the Army Production Plan
for Self-Propelled Howitzers. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 23P Mazza, Thomas N. ; Paarmann,
Arthur W. ; Netzler, Martin, Jr;
REPT. NO. DRSAR/SA/N-41

UNCLASSIFIED REPORT

DESCRIPTORS: *Risk analysis, *Howitzers, *Self
propelled guns, Estimates, Production, Network
analysis(Management), Army planning (U)
IDENTIFIERS: M-109 howitzers(155-mm), M-110
howitzers(8-in.), M-110A1 howitzers(8-in.) (U)

The M109 and M110 self-propelled howitzers are
presently being product-improved. This analysis
assessed the risks of achieving the milestones
prescribed by the production plans for both
howitzers. Based on the relationships/interfaces
among the milestones, a network model was developed
to depict these relationships and serve as a road map
for accomplishing the goals within the desired time
frame. The results indicated a high risk of
meeting the schedule for full release with an
expected slippage of 12 months for the M109 and 5-
1/2 months for the M110A1. (Author) (U)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
REPORT NUMBER JCAP-DM-7-001	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) Users'/Analysts' Manual for the Venture Evaluation and Review Technique (VERT).		5. PERIOD COVERED Final Report	6. PERIOD COVERED Indefinite
7. AUTHOR G. L. Moeller		8. PERFORMING ORG. REPORT NUMBER	9. CONTRACT OR GRANT NUMBER(s)
10. PERFORMING ORGANIZATION NAME AND ADDRESS Decision Models Directorate Joint Conventional Ammunition Program Coordinating Group, Rock Island, IL 61299		11. PROGRAM ELEMENT PROJECT TASK AREA & WORK UNIT NUMBERS 11 Oct 79	
12. CONTROLLING OFFICE NAME AND ADDRESS Decision Models Directorate Joint Conventional Ammunition Program Coordinating Group, Rock Island, IL 61299		13. SECURITY CLASS. of this report Unclassified	
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SEC. CLASSIFICATION/CONTINUING SCHEDULE	

ABSTRACT

This Users'/Analysts' Manual provides information in sufficient detail to permit installation and application of the VENTURE EVALUATION AND REVIEW TECHNIQUE (VERT). VERT is a computerized, mathematical oriented simulation network technique designed to model decision environments under risk. Historically, VERT has been used principally to assess the risks involved in the undertaking of a new venture, as well as in the estimation of future capital requirements, control monitoring, and overall evaluation of on-going projects, programs, and systems. Modeling is accomplished with a small set of easily comprehended operators which readily facilitates the structuring of a symbolic pictorial network layout of the system under study. VERT is an adaptive tool, thereby allowing the scope and level of abstraction to rest almost entirely in the hands of the analyst. Thus, modeling can be accomplished on a one-for-one basis, whereby one real world event and activity is correspondingly represented symbolically as one event and activity in the VERT network; or, modeling can also be accomplished on a compressive basis whereby a multitude of real world events and activities are compressed into the symbolic representation of a few events and activities in the VERT network.

Georgia Institute of Technology
Atlanta School of Industrial An--ETC
Application of Decision/Risk
Analysis in Operational Tests and - ETC
DESCRIPTIVE NOTE:
September, 1975
Montgomery, D. C.
Callahan, L. G.

The Effects of Feedback on Task
Group Behavior: A Review of
the Experimental Research
DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance
23, 309 - 338 (1979)
Nadler, David A.

Experimental research on the cueing and motivational effects of feedback on behavior in task groups is reviewed. The impact of feedback is seen as contingent on several factors including the nature of the feedback information (including level of aggregation, task/process focus, and evaluative content), the process of using feedback, individual differences among group members, and group task structure. Feedback is seen as contingently leading to affective and cognitive outcomes, including level of attraction to the group, pride in the group, motivation, defensive feelings, and acceptance of group problems. Feedback is also seen as potentially leading to behavioral outcomes such as task performance, membership behavior, and coping behavior. A preliminary model of the impact of feedback is constructed.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A013 729 21/5 15/5

RAND CORP SANTA MONICA CALIF

Performance/Schedule/Cost Tradeoffs and
Risk Analysis for the Acquisition of Aircraft
Turbine Engines: Applications of R-1288-PR
Methodology.

(U)

JUN 75 26P Nelson, J. R. ;
REPT. NO. R-1781-PR
CONTRACT: F44620-73-C-0011

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-780 636.

DESCRIPTORS: *Aircraft engines, *Turbines, *Air
Force procurement, *Logistics planning, Trade off
analyses, Weapon systems, Performance, Scheduling,
Cost analysis, Risk, Turbofan engines,
Afterburning

(U)

IDENTIFIERS: Cost models, Risk analysis,
*Logistics management, Rolls Royce RB 211
engines

(U)

The report discusses two applications of a cost-estimating model that incorporates quantitative measures of an engine's performance. A summary measure, called time of arrival (TOA), can be used in the decisionmaking process to trade off performance, schedule, and cost during the conceptual phase of aircraft turbine engines. The author briefly reviews the TOA measure and cost-estimating methodologies and then presents a tradeoff and risk analysis of two present-day programs: the Rolls Royce RB211 engine program and a new, hypothetical, afterburning turbofan engine program. The analysis indicates: (1) The cost growth for the RB211 was due to an ambitious British program, in terms of performance level demanded for the specific schedule desired. (2) A schedule requiring a new engine 'ahead of its time' results in a higher cost if it is achieved; it also exposes the engine, and the entire weapon system, to a higher risk of performance shortfall, schedule slippage, and cost growth. Future plans include an extension of the TOA methodology to the assessment of ownership costs for engines.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A019 932 19/1 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the US Army 155mm Cannon-
Launched Guided Projectile Program. (U)

DESCRIPTIVE NOTE: Interim note,
DEC 74 19P Netzler, Martin, Jr;
REPT. NO. AMSAR/SA/N-30

UNCLASSIFIED REPORT

DESCRIPTORS: *Guided projectiles, *Artillery
ammunition, *Cost analysis, Risk, Scheduling,
Production, Uncertainty, Networks, Statistical
analysis (U)

IDENTIFIERS: CLGP(Cannon Launched Guided
Projectile), *Cannon launched guided projectile,
Vert network analyzer, Network analysis, *155-mm
guided projectiles (U)

This analysis estimates the schedule and cost risks
associated with the Army 155mm Cannon-Launched
Guided Projectile (CLGP) development program.
The analysis considered the Army CLGP program
from 1 January 1975 to initiation of full scale
production. Uncertainties were analyzed by
simulating the program using a network format and
representing cost and schedule as random variables.
Statistics were obtained using the VERT network
analyzer. The planned program schedule and costs
were found to be close to those obtained from the
network analysis. (Author) (U)

How DCAA Uses Risk Analysis In
Planning and Programming Audits
DESCRIPTIVE NOTE: The Internal
Auditor
June, 1979
Neuman, Frederick

By employing risk analysis, DCAA has been able to optimize the use of limited auditor resources in meeting its audit responsibilities. Not only are we assured that the areas with highest payoff, such as operations audits, are scheduled for review; but we are equally assured that deferred audits are those in which the risk is minimal.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 084325

AD-A015 624 15/5 5/1
NAVAL TRAINING EQUIPMENT CENTER ORLANDO FLA TRAINING
ANALYSIS AND EVALUATION GROUP

Acquisition Cost Estimating Using
Simulation. (U)

DESCRIPTIVE NOTE: Final rept.,
SEP 75 29P Okraski, Henry C. ;Parrish,
William F. , Jr:
REPT. NO. TAEG-TM-75-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost estimates, *Computerized
simulation, Government procurement, Logistics
support, Computer programming, Mathematical models,
Risk, Uncertainty (U)
IDENTIFIERS: ACES model (U)

Acquisition cost estimates developed as single
point values are, at best, misleading and, at worst,
impossible to achieve. Single point estimates do
not sufficiently reflect the assumptions, judgment or
apprehensions of the estimator. This paper deals
with a technique for incorporating uncertainty and
risk into the acquisition cost estimating procedure
such that the estimates are presented as a range of
values, encompassing engineering, manufacturing and
logistic support estimates. The cost estimating
model, a pragmatic application of simulation and
classical cost estimating procedures, has been
programmed in BASIC and is generalizable and
exportable. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-8010 208L 19/6 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

XM198 155mm Towed Howitzer Decision Risk
Analysis for ASARC/DSARC III. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 76 79P Olson, Stuart W. ;Trier,
Norman H. ;
REPT. NO. DRSAR/SA/R-17

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Proprietary Info.; Mar 76. Other requests for this
document must be referred to Commander, Army
Armament Command, Rock Island Arsenal, Attn:
DRSAR-SA, Rock Island, Ill. 61201.

DESCRIPTORS: (*Howitzers, *Army procurement),
(*Risk analysis, *Decision making), Selection,
Uncertainty, Cost analysis, Scheduling,
Computerized simulation, Ammunition, Army
planning, United States, Great Britain, West
Germany, Italy, Recoil mechanisms, Towed bodies,
Range(Distance), Combat readiness (U)

IDENTIFIERS: *155mm howitzers, *M-198
howitzers(155-mm), VERT(Venture evaluation
review technique), Venture evaluation review
technique, FH-70 howitzers(155-mm), M-114
howitzers(155-mm), Soft recoil, LCSR(Large
caliber soft recoil system), Large Caliber soft
recoil system (U)

A decision risk analysis (DRA) was performed for
the XM198 155mm Towed Howitzer Program. The
alternatives analyzed are those to be decided at
ASARC/DSARC III for the XM198 program. They
are: continue the XM198 into limited production
or terminate the XM198 and either purchase the
United Kingdom, Federal Republic of
Germany, Italian FH-70 155mm towed howitzer or
develop a large caliber, soft recoil 155mm towed
howitzer. Improving the current standard M114A1
155mm towed howitzer to provide an interim improved
capability was also analyzed. The DRA was
conducted on the basis of the uncertainties in the
cost and schedule associated with each alternative,
using the Venture Evaluation Review Technique
(VERT) network simulator. An appendix discusses (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A026 680 19/6 12/2

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the M110E2 Self-
Propelled Howitzer (From Development
Acceptance in-Process Review to Initial
Operating Capability). (U)

DESCRIPTIVE NOTE: Final rept..
MAY 76 22P Paarmann, Arthur W. ; Netzier,
Martin, Jr. ; Mazzia, Thomas N. ;
REPT. NO. DRSAR/SA/N-40

UNCLASSIFIED REPORT

DESCRIPTORS: -Risk analysis, -Howitzers, -Self
propelled guns, Acceptance tests, Simulation,
Fert. Propelling charges (U)
IDENTIFIERS: M-110E2 howitzers(8-in.), XM-
188E3 propelling charges, Vert (U)

The cost and schedule risk analysis associated with
the M110E2 self-propelled howitzer was performed.
Uncertainties associated with the time frame
between the Development Acceptance (DEVA) In-
Process Review (IPR) and Initial Operating
Capability (IOC) are considered. Evaluation
was accomplished with the Venture Evaluation
Review Technique (VERT) network analyzer.
Results showed very low risk in achieving IOC
within the desired time frame. (U)

A Novel Approach for
Introducing Risk Analysis
DESCRIPTIVE NOTE:
Managerial Planning
July-August, 1978
Volume 26, Number 1
Pekar, Peter P., Jr.
Ellis, Darryl J.

The questions facing management in determining which capital pfoject should go first are: What precise results can be expected? What information must be estimated to obtain results? Is there a way to get basic agreement on key factors such as -- demand, prices, costs, insurance coverage and so on? And how is return on invested capital measured?

Current conventional methods are one dimensional. The reason is that estimates made to depict futute occurrences are just that, estimates. Because uncertainty encompasses these estimates, all calculations prove to be self-defeating. Even estimates derived independently from individual specialists in the corporate structure are subject to question. Information gathered from numerous sources is meaningless if not logically descriptive of future results. For these reasons, the described simulation approach has the inherent advantage of simplicity in depicting reality. However, it requires management support in wanting a portrait of the risks and rewards; as well as expert follow-through on the part of the planners. The technology to simulate has already been developed and is easy to use; all that is necessary is management's need and the ability to analyze uncertainty.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A009 077 19/6

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
OFFICE

Reassessment of the Aluminum Bottom Carriage
for the XM198 Howitzer. (U)

DESCRIPTIVE NOTE: Technical note.
MAR 75 47P Powell, Roger W. ; Morris,
William H. ;
REPT. NO. SAO-Note-16

UNCLASSIFIED REPORT

DESCRIPTORS: -Howitzers, -Carriages, Aluminum,
Decision making, Costs, Risk (U)
IDENTIFIERS: M-198 howitzers(155-MM), XM-198
howitzers(155-MM), Decision risk analysis (U)

A decision risk analysis was performed to compare the expected cost, schedule, and technical risks of the current development of a steel bottom carriage for the XM198 155mm Howitzer with those of a proposed parallel development of an aluminum version of the bottom carriage. Computerized VERT simulation networks were used to represent the time and technical risk interrelationships among the activities and decision points of the alternative programs. Expected costs were based on an approximation of the planned XM198 buy with the proportion of steel or aluminum carriages determined by alternative production change-over dates. (U)

Federal Standards in Risk Analysis
and Contingency Planning

DESCRIPTIVE NOTE:

Data Management

Volume 18

Reed, Susan K.

Katzke, Stuart W.

The requirement to perform risk analysis for Federal agencies exists now but the methodology is optional. Risk analysis technology is in an evolutionary stage. In evaluating various methods, it is noted that many of the benefits of a risk analysis are intangible.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B015 709L 14/1 12/1 9/5

MANTECH OF NEW JERSEY CORP NEW SHREWSBURY

Relationship Between Cost and Schedule Risk.

(U)

NOV 76 24P
CONTRACT: DAAB07-76-D-6137

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 27 Dec 76. Other requests for
this document must be referred to Commander, Army
Electronics Command, Attn: DRCPM-RBS, Fort
Monmouth, N. J. 07703.

DESCRIPTORS: *Costs, *Scheduling, *Risk analysis,
Electronic equipment, State of the art, Delay,
Normal distribution, Boundedness, Overruns,
Probability density functions, Gamma distribution,
Development costs, Approximation(Mathematics),
Remote Detectors, Ground sensors, Surveillance,
Monitors

(U)

Among the problems involved in estimating the cost of development of a state-of-the-art electronic component are the risks inherent in its development. Technical risk is the risk that it may not be possible to design, develop and construct an item that conforms to the mission parameters by the specified date. Schedule risk is the possibility that the development time may exceed the agreed-upon schedule. These two terms are not disjoint: in fact, it may be said that technical risk is actually part of the schedule risk, since the possibility of not being able to develop an item at all is but one of the factors that may contribute to a schedule overrun. Once a development time and schedule risk have been estimated, it remains to estimate cost, using the assumed level of effort. In this paper it is argued that the procedure for cost estimation commonly used should be modified to give increased accuracy, and methods are developed for so doing. Methods are also developed for computing the cost estimates for altered values of assumed risk.

(U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A022 359 19/6

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the M110E2 SP Howitzer
(from DEVA IPR to Initial Operating
Capability).

(U)

NOV 75 26P

UNCLASSIFIED REPORT

DESCRIPTORS: *Self propelled guns, *Howitzers,
*Risk analysis, Scheduling, Production control,
Cost estimates, Quality assurance,
Retrofitting

(U)

IDENTIFIERS: M-110 howitzers(8-IN.), M-
110E2 howitzers(8-IN.), M-106
cartridges(8-IN.), M-188 propelling charges,
XM-188E3 propelling charges

(U)

This study was performed to assess the cost and
schedule risks associated with achieving Initial
Operating Capability (IOC) of the M110E2
Self-Propelled Howitzer using the XM188E3
propellant charge (Zone 8 only) and firing the
M106 Projectile.

(U)

Risk Analysis Makes Chemical
Plants Safer

DESCRIPTIVE NOTE:

C and En Oct. 2, 1978

A brief discussion of various
groups and techniques for
considering hazardous
situations in manufacturing
is presented in this article.

Risks Of Shipping Chemicals
Studies

DESCRIPTIVE NOTE:

E and Engineering Technology

April 5, 1976

This article discusses a hand-
book that has been developed
for dealing with chemical
hazards associated with the
shipment of chemicals.

AD-A098 934

DAYTON UNIV OH SCHOOL OF ENGINEERING

F/6 5/1

PENETRATION STUDY: BEHAVIORAL ASPECTS OF DECISIONS UNDER UNCERT--ETC(U)

JAN 80 D RIPPY, P SWEENEY

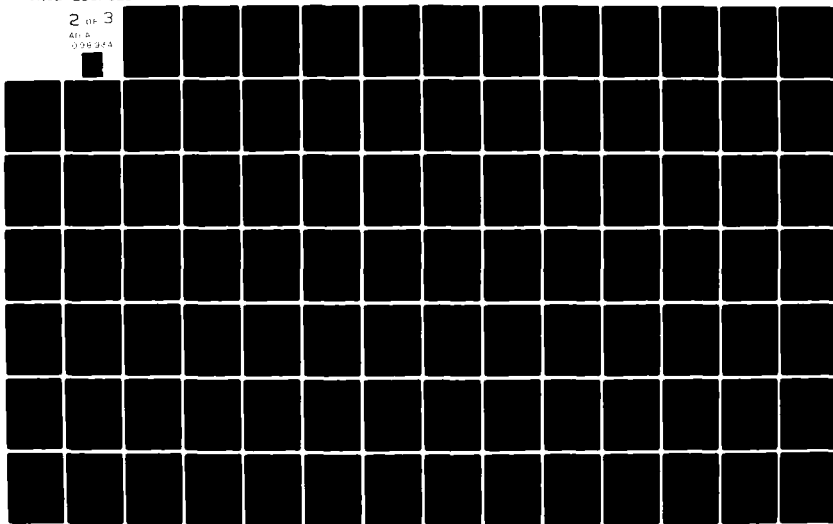
F33615-80-C-5139

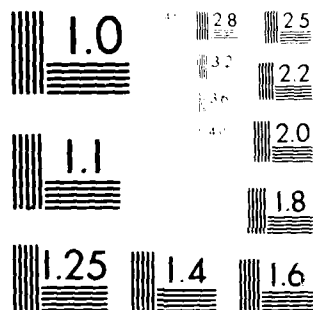
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UNCLASSIFIED

2 OF 3

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098 934





MICROCOPY RESOLUTION TEST CHART
NATIONAL BUREAU OF STANDARDS-1963-A

Improving the Quality of Group Judgment:
Social Judgment Analysis and the Delphi
Technique

DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance
24, 73-92 (1979)

Rohrbaugh, John

Previous research findings suggest that group judgment is superior to individual judgment, although groups fail to reach their full potential because of problems associated with the interaction process. Thus, groups perform at a level generally better than the competence of their average members, but rarely as well as their most proficient members. The current study explores two methods of group judgment making which have been developed to reduce the discrepancy between potential and actual group performance: social judgment analysis and the Delphi technique. These two methods are compared in a controlled experimental setting with regard to their potential both to significantly reduce group disagreement and to provide accurate judgments. The two methods were found to be equal in the quality of judgments produced. Social judgment analysis, however, was a significantly better method of reducing disagreement than the Delphi technique.

York University
Conditional Risk Analysis
DESCRIPTIVE NOTE: Decision Sciences
Volume 9, 1978
Saipé, Alan L.

ABSTRACT

This paper introduces conditional risk analysis as a new approach to extend the standard risk analysis method of Hertz. An exercise in profit planning is used to illustrate the special features of conditional risk analysis: total risk measurement, risk decomposition, factor outcome analysis and variable significance analysis. Mathematical expressions are presented for performing the various analyses.

Making Meetings More Successful:
Plans, Formats, and Procedures
For Group Problem-Solving
DESCRIPTIVE NOTE: The Journal
of Business Communication
Volume 16:4
Seibold, David R.

This essay treats several aspects of group meetings and conferences: 1) steps in planning for chairing a meeting or conference; 2) possible formats, or general superstructures, for organizing sessions and facilitating group discussion and decision efforts; 3) alternative procedures for group problem-solving (Problem Census, Rational Reflection, Brain-storming, Buzz Groups, Nominal Groups, Delphi Method, Listening Teams, Role Playing, Two-Column Technique, RISK, and PERT). There is an example illustrating how these formats and procedures can be used conjointly.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A012 886 5/1 9/2

MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH
CENTER

An Interactive Computer Program for
Assessing and Using Multiattribute Utility
Functions.

(U)

DESCRIPTIVE NOTE: Technical rept.,
JUN 75 133P Sichernman, Alan ;
REPT. NO. TR-111
CONTRACT: N00014-67-A-0204-0056
PROJ: NR-047-104, MIT-CS-73767

UNCLASSIFIED REPORT

DESCRIPTORS: *Decision making, *Computer programs,
Risk, Uncertainty, Probability density functions,
Mathematical models, Theses

(U)

IDENTIFIERS: *Utility functions, Preferences,
Sensitivity analysis, MUFCAP computer program

(U)

This report presents a computer package designed to facilitate the assessment and use of a decision maker's utility function for multiple objectives. The package provides routines for (1) specifying the decision maker's preferences over multiple criteria, (2) treating uncertainty in the consequences resulting from a decision, (3) ranking alternative courses of action in order of preference, and (4) studying the effects changes in preferences or uncertainty estimates may have upon the ranking of alternatives. The routines are designed to be applicable in a variety of problem contexts. The paper is organized as follows. The decision analysis approach which provides the theoretical basis for the program is summarized. This is followed by a description of existing methods for multiattribute utility function assessment and use. Then the computer package is presented and compared with the aforementioned methods. Applications of the package to several problems are illustrated and areas for future improvement and research are suggested.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A024 198 15/5 12/2

GEORGIA INST OF TECH ATLANTA SCHOOL OF INDUSTRIAL AND
SYSTEMS ENGINEERING

An Application of Multivariate Discriminant
Analysis and Classification Procedures to
Risk Assessment in Operational Testing. (U)

DESCRIPTIVE NOTE: Master's thesis.
JUN 75 134P Simms, Edward Dewey, Jr;
CONTRACT: DAAG39-75-C-0097

UNCLASSIFIED REPORT

DESCRIPTORS: *Operational test and evaluation,
*Risk, *Multivariate analysis, Discriminate
analysis, Mathematical models, Military procurement,
Sampling, Trees (U)

This research develops a methodology which
determines an index used in the assessment of risk in
Operational Testing. The risk assessment
problem examined is that of preference statements
regarding competing systems. In order to evaluate
the competing systems, a multivariate statistical
analysis of the systems is undertaken. Through the
analysis of the multivariate distributions of each
system and the overlap of these distributions, the
index of risk is determined. Thus the index of risk
is a measure of similarity of the competing
systems. (U)

Stanford University
Department of Operations
Research
On the Risk-Sensitive Optimality
Criteria for Markov Decision
DESCRIPTIVE NOTE:
June 1975
Sladky, K.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A073 510 5/1

RAND CORP SANTA MONICA CA

Air Force Acquisition Options for the 1980s:
A Briefing on Study Plans. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 79 18P Smith, Giles K. ;
REPT. NO. RAND/N-1241-AF
CONTRACT: F49620-77-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement, *Air Force
planning, Weapon systems, Acquisition, Policies,
Risk, Cost analysis, Trade off analyses,
Contract administration, Air Force budgets (U)

Presents the slides and text of an informal
briefing given at HQ AFSC in June 1979.
Outlines the current status of RPN 3702, 'Air
Force Acquisition Options for the 1980s,' puts
this project in the context of previous Rand work,
and describes study plans. Emphasis is on how to
acquire weapon systems, not what systems to acquire.
(Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A044 355 12/2 5/9

ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG
MISS

Operations Research/Systems Analysis.

(U)

DESCRIPTIVE NOTE: Miscellaneous paper,
JUN 69 37P Smith, James F. ;
REPT. NO. WES-MP-T-69-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Operations research, *Systems
analysis, *Courses(Education), Decision making,
Trade off analyses, Risk analysis, Cost
effectiveness, Mathematical models, Dynamic
programming, Heuristic methods, Decision theory,
Delphi techniques, Computer applications, Research
management, Army research

(U)

Systems analysis represents an approach to, or a
way of looking at, complex problems of choice under
uncertainty. It offers a means of discovering how
to design or to make effective use over time of
technologically complex structure in which the
different components may have apparently conflicting
objectives; that is, an approach to choosing a
strategy that yields the best balance among risks,
effectiveness, and costs. Its purpose is to place
each element in its proper context so that in the end
the system as a whole may achieve its aim with a
minimal expenditure of resources. Thus systems
analysis is a common sense approach to problems of
decision.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B005 061L 13/10 13/13

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Decision Risk Analysis (DRA) on the
Development of the Bridge-Erection Boat for
the Ribbon Bridge.

(U)

MAY 75 74P Smith, Jeffrey A. ;
REPT. NO. USAMERDC-2143
PROJ: DA-1-G-764717-DH-01
TASK: 1-G-764717-DH-0105

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 30 Dec 74. Other requests for
this document must be referred to Commander, Army
Mobility Equipment Research and Development
Center. Attn: AMXFB-BP. Fort Belvoir, Va.
22060.

DESCRIPTORS: (=Boats. Experimental design),
(=Bridges. Construction), Fabrication, Risk,
Assessment, Decision making, Systems analysis,
Mathematical models, Simulation, Computer
programs, Monte Carlo method, Costs,
Scheduling

(U)

IDENTIFIERS: *Ribbon bridges, *Bridge erection
boats, Decision risk analysis

(U)

This report documents the decision risk analysis
(DRA) that was performed on the development of the
bridge-erection boat for the Ribbon Bridge. The
DRA was done to quantify the risks, costs, and
times involved for each of six candidate bridge-
erection boats. A network was developed for each
candidate boat and two networks were developed for
simulating competitive prototyping during the EDT
phase. A computer program, utilizing a Monte
Carlo technique, was used to simulate each of the
development approaches and to produce output
statistics in terms of cost, schedule, and
performance. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 759 281 15/5

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Risk Analysis of the Supply-Handling
Conveyor System. (U)

DESCRIPTIVE NOTE: Final rept.,
JAN 73 54P Smith, Jeffrey A. ;
REPT. NO. USAMERDC-2050
PROJ: DA-1-G-664717-DH-14
TASK: 1-G-664717-DH-1404

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMY EQUIPMENT, HANDLING), (*CONVEYORS,
ARMY EQUIPMENT), WEIGHT, CONFIGURATION, LOADS(FORCES),
VELOCITY, DESIGN, PERFORMANCE(ENGINEERING), FIRE
RESISTANT MATERIALS, COMPUTER PROGRAMMING,
PROBABILITY (U)
IDENTIFIERS: *RISK ANALYSIS, *COST ANALYSIS (U)

The report documents the risk analysis that was performed on a supply-handling conveyor system. The risk analysis was done to quantify the risks involved for project development in addition to compliance with the draft AMC regulation on risk analysis. The conveyor system is in the final phase of concept formulation and is ready for the system description/coordinated test program in-process review. The objective of this analysis is to quantify the development time, cost, and performance for the System with respect to various development approaches. A Decision Tree type Logic Diagram is used to graphically portray each development approach. A computer program, utilizing a Monte Carlo technique, is used to simulate each of the development approaches and to produce output statistics in terms of cost, schedule, and performance. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-C007 994 19/3

ABERDEEN PROVING GROUND MD

Competitive Developmental Test (Technical
Performance Phase) of Armored
Reconnaissance Scout Vehicle, XM800. (U)

DESCRIPTIVE NOTE: Test plan,
JUL 73 122P Sobczyk, J. P. ; Sova, J.
T. , Jr.; Martin, C. E. , Jr;
PROJ: 1X564605D417

UNCLASSIFIED REPORT

NOFORN

DESCRIPTORS: *Armored vehicles, *Scout cars, M-800
vehicles, XM-800 vehicles, Amphibious vehicles,
Tracked vehicles, Wheeled vehicles, Comparison,
Operational test and evaluation, Human factors
engineering, Fire control systems, Maintainability,
Safety (U)
IDENTIFIERS: Environmental tests, Mobility,
Reliability, Risk analysis,
Performance(Engineering), Vulnerability
analysis, Artillery fire, Hit probabilities,
Ammunition damage, Night warfare, PE64605A,
AS417 (U)

The Armored Reconnaissance Scout Vehicle is
a small, 3-man, lightly armored combat vehicle. The
combat-mission requirements emphasize the need for a
specially designed scout vehicle that will provide a
balanced combination of mobility, agility, detection
capability in all weathers, quiet operation, and
firepower and protection unique to the ground scout-
vehicle mission. The systems offered for test will
be equipped with the gun, automatic, 20-mm, M139,
the AN/VRC-49 radio system, the AN/VIC-1
intercommunication system, and certain other standard
items; however, the contractors have considerable
latitude in the manner in which most performance and
physical characteristics are met. The competing
systems will be wheeled versus tracked vehicles. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A047 620 5/1 9/2

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

VERT - A Risk Analysis Technique for
Program Managers.

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 77 34P Thomas, Thomas N. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Management, *Risk analysis,
*Decision making, Computerized simulation, Network
analysis(Management), Cost analysis, Time
dependence, Assessment, Uncertainty, Scheduling,
Probability, Management information systems,
Computer applications, Military procurement,
Acquisition

(U)

IDENTIFIERS: Program management, *Venture
Evaluation Review Technique, Vert(Venture
Evaluation Review Technique)

(U)

This report describes the capabilities of the
VERT(Venture Evaluation and Review
Technique) risk analysis technique and reviews
its current applications in support of the program
manager (PM). PM's are continuously faced with
making decisions without complete certainty of their
impact. These decision situations involve certain
risks or probabilities concerning the time, cost and
technical performance effects. New techniques have
been evolving to assist decision makers (e.g.,
PM's in this risk environment. VERT is a network
simulation modeling technique recently developed to
provide this assistance. From information collected
through interviews with Army and Navy personnel
supporting PM's, a profile of current VERT
applications and their effectiveness is developed.
Applications discussed vary from the support of
major programs like the Advanced Attack
Helicopter to smaller efforts like the Platoon
Early Warning System.

(U)

Compensation and Benefits
DESCRIPTIVE NOTE:

Personnel Journal

November, 1979

Volume 58

Thomsen, David J.

There are many examples
of how Bayesian statistics
(also known as risk analysis)
can be used in the area of
compensation and benefits.
Several examples are given.

The Supervisor's Survival Guide:
Being Group Leader

DESCRIPTIVE NOTE:

Supervisory Management

March, 1979

Volume 24

Thompson, Ken, Ph.D.

Pitts, Robert E., Ph.D.

This article presents information
about group behavior and some
guidance to supervisors as to how
to work with the group.

Incremental Analysis Under
Conditions of Uncertainty

DESCRIPTIVE NOTE:

Managerial Planning

May-June, 1978

Volume 26, Number 6

Thornton, Fred A.

In recent years statistical techniques have become a significant factor in the planning and decision making of managers. The use of decision theory in business problem solving is becoming widespread. Thus, managers need to recognize and understand various quantitative techniques which could help them in arriving at difficult decisions. The purpose of this article is to present some of the various applications of decision theory which have been put forth in recent years by writers. These ideas should help managers to identify particular situations in their own companies where such techniques might benefit them and to help them understand the applicability and value of such techniques.

"We Used Risk Analysis To
Move Our Computer"

DESCRIPTIVE NOTE:

Industrial Engineering

May, 1977

Townsend, H. William R.

Whitehouse, Gary E.

This article presents a risk
analysis used by a company
to measure alternative methods
for relocating their large
corporate computer.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A036 327 5/3 12/1

COCKERHAM (JOHN M) AND ASSOCIATES INC HOPEWELL VA

US Army Total Risk Assessing Cost
Estimate (TRACE) Guidelines.

(U)

DESCRIPTIVE NOTE: Technical rept.

DEC 76 94P

CONTRACT: DAH01-76-C-1066

PROJ: 1W362303A214

MONITOR: RC 77-3

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost estimates, *Army budgets, *Risk
analysis, Network flows, Scheduling, Uncertainty,
Flow charting, Allocations, Cost overruns

(U)

IDENTIFIERS: Trace analysis, *Total risk assessing
cost estimates, AS214, PES2303A

(U)

This report describes the background, logic, and
purpose of the TRACE concept. Some basic
methodologies for conducting TRACE analyses are
described and illustrated. Procedures to be
followed for obtaining risk capital are also
described and illustrated. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A041 467 14/1 5/1

ARMY WAR COLL CARLISLE BARRACKS PA

Implementation of Risk Assessment in the
Total Risk Assessing Cost Estimate
(Trace).

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 77 83P Venzke, Gene A. ;

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Cost estimates, *Risk analysis,
*Systems management, Probability distribution
functions, Research management, Cost models
IDENTIFIERS: TRACE (Total risk assessment cost
estimate), Total risk assessment cost
estimate

(U)

(U)

The concept of the Total Risk Assessing
Cost Estimate (TRACE) was articulated by the
ASA (R and D) on 12 July 1974. It is a means
of explicitly accommodating the unforeseen and
unidentifiable costs which characterize research and
development projects. The TRACE is required to
possess the property that it is an estimate of the
50th percentile of the project cost probability
distribution. Unfortunately, early attempts to
implement the TRACE met with limited success. A
formalized study was undertaken to develop adequate
techniques and two candidate methodologies emerged.
One of the approaches, the TRACE Network Model,
is extremely promising. The second technique,
TRACE Risk Tabulation, can be improved upon by a
modification involving computer generation of the
imbedded probability distribution. There remain
some problems in 'educating' users of the value of
the TRACE, and the TRACE concept suffers from
some inherent shortcomings. It is recommended that
the new techniques for developing the TRACE be
implemented, along with some ancillary actions to
support the implementation and enhance the usefulness
of the TRACE. (Author)

(U)

Optimizing Decision
Support Systems
DESCRIPTIVE NOTE:
Datamation
Wagner, G. R.

The author discusses the
idea of an executive support
system to achieve the
coupling of an individual's
intellectual resources with
those of the computer.

JDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 8HN29N

AD- 768 136 15/5 5/1

ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

Implementation of the Feedback Capability to
RISCA.

(U)

MAY 73 117P Watts, Robert J. ;
REPT. NO. USAMC-ITC-1-73-25

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY PROCUREMENT, COSTS), MANAGEMENT
PLANNING AND CONTROL, PROBABILITY, DECISION MAKING,
FEEDBACK, COMPUTER PROGRAMS, STATISTICAL ANALYSIS (U)
IDENTIFIERS: RISCA COMPUTER PROGRAM, *COST ANALYSIS,
RISK, PERT, NETWORK ANALYSIS(MANAGEMENT), LOGISTICS
MANAGEMENT (U)

The research is designed to expand the capabilities of the simulation computer program, RISCA (Risk Information System for Cost Analysis). RISCA has been developed for the risk analysis educational effort at the United States Army Logistics Management Center (ALMC). This computer program facilitates the analysis of systems that are representable by a general class of network structures by performing a Monte Carlo simulation of the system. Thus, RISCA provides the user with the capabilities of investigating the effects of modifying an acquisition system or comparing one acquisition system against alternate systems. RISCA's most apparent limitation, however, is its lack of a feedback capability. The purpose of this research will be to eliminate this limitation. An effort will also be made to revise the method of activity and event sequencing performed by the computer program during the simulation. This last change will be made to reduce the time to simulate systems with RISCA. The final success of expanding the capabilities of RISCA will be demonstrated by some example feedback networks.
(Author)

(U)

Investor Behavior:

Work or Play?

DESCRIPTIVE NOTE:

The Journal of Portfolio Management

Volume 6, No. 2

Weinflash, David

Conventional risk analysis assumes that man predictably seeks to maximize the greatest good. The measure of good comes from the theory of utility. The problem with this assumption is that man does not react in this fashion many times in the real world. Rather than being risk averse, man, in many circumstances finds pleasure in risky situations.

Using Risk Analysis Methods

DESCRIPTIVE NOTE:

Data Management

January, 1977

Volume 15

Weiss, Harvey

In attempting to answer questions about what is being received from a company change, questions must be answered concerning (1) Why change, (2) operational aspects of a change, and (3) methods used in a change. Risk analysis is a method that may be used to answer questions in these areas.

CATALOG OF SOURCES

BY

TOPIC AREA

Group Decision-making

Equipment Replacement Models:
User Evaluation
DESCRIPTIVE NOTE:
Journal of Purchasing
Adam, Everett E., Jr.
Pohlen, Michael F.

This article describes a study in which a comparative evaluation of several well-known equipment replacement models was conducted. The models were rated according to various criteria by individuals in several manufacturing organizations faced with equipment replacement decisions. These evaluations are summarized in a Weighting function which provides a single measure for comparing the models.

An Analysis of Group Decisions
Involving Risk ("The Risky Shift")
DESCRIPTIVE NOTE:
Human Relations
Volume 22, Number 5
pp 381-395
Burnstein, Eugene

This article presents an analysis
of the conditions under which
groups in a laboratory situation
commit themselves to a goal,
demands extraordinary effort
or skill and whose probability
of achievement is not high.

What Are The Risks In
Risk Analysis
DESCRIPTIVE NOTE:
Harvard Business Review
July-August, 1972
Carter, E. Eugene

Installing risk analysis throughout a company is a difficult, time-consuming, and expensive operation. Some companies may have an easier time of it than others; the author suggests, for example, that a strongly decentralized organization may be able to bend risk analysis to its purposes more easily (other things being equal) than a strongly centralized organization can. He cites many other relevant factors as well: human reaction and resistance, difficulties inherent in the technique itself, problems of integrating risk analysis procedures with management procedures that already exist in the company, and so forth. This article focuses on the experiences four major oil companies have had in using risk analysis, experiences that cover the range from "success" to "complete failure." The author outlines and discusses the factors that seemed to ease the introduction of risk analysis in the companies that used it with relative success and the factors that dragged the technique down in the companies in which its introduction finally proved an abortive undertaking. He provides a useful checklist of potential troublespots for managers who are thinking of adopting risk analysis in their own companies.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A006 749 5/1

MINNESOTA UNIV MINNEAPOLIS MANAGEMENT INFORMATION SYSTEMS
RESEARCH CENTER

Analysis and Design of Computer-Based
Management Information Systems: An
Evaluation of Risk Analysis Decision Aids. (U)

DESCRIPTIVE NOTE: Working paper series (Final).
SEP 74 197P Chervany, Norman L.; Sauter,
Richard F. :
REPT. NO. Monograph-5
CONTRACT: N00014-57-A-0113-0017
PROJ: NR-049-300

UNCLASSIFIED REPORT

DESCRIPTORS: *Management information systems.
*Decision making. *Risk. Uncertainty.
Statistical analysis. Warehouses. Expansion.
Computer programming. FORTRAN (U)
IDENTIFIERS: CDC 6400 computers, CDC 5600
computers. Sales. Demand Economics (U)

This report evaluates the use of three different
forms of risk analysis decision aids, one
deterministic and two probabilistic versions, in a
warehouse expansion decision context. In addition,
several decision-maker characteristics-experience,
background, attitude toward quantitative data,
attitude toward computer potential in management, and
risk preference-are examined in conjunction with the
three decision aids. The impact of these factors
is measured in terms of (1) decision made,
(2) supporting documentation for the decision
made, and (3) evaluation of the decision
aid. (U)

Contextural Correlates of R and D Team
Collaborative Problem Solving
Dailey, Robert: Morgan, Cyril P.

This article is a report concerning a study which examines the relationships between R and D team collaborative problem solving and four theoretical team predictors: (1) Team cohesiveness, (2) Task certainty, (3) Task interdependence, and (4) Team size. The results of the study generally indicate that cohesiveness and task certainty are important predictors of perceived R and D team collaborative problem solving.

Group, Task, and Personality
Correlates of Boundary-Spanning
Activities

DESCRIPTIVE NOTE: Human Relations
Volume 32, No. 4, 1979, pp. 273-285
Dailey, Robert C.

Boundary-spanning activities were studied in 15 organizations engaged in basic and applied research. Included in the study were 281 scientists and engineers. Contrary to prior theory and research, this study found boundary-spanning activities to be unrelated to job satisfaction. It was strongly related to perceptions of research and development team collaboration, job motivation, task uncertainty, locus of control, team cohesiveness, and individual productivity. The research reported here makes a strong case for including group processes and characteristics in future studies involving boundary-spanning activities. The results also give increased impetus to research which examines the relationships between boundary-spanning activities and individual productivity.

ODC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 084325

AD-A056 921 5/1 12/2
DECISIONS AND DESIGNS INC MOLEMAN VA

Research on the Technology of Inference and
Decision.

(U)

DESCRIPTIVE NOTE: Final rept. 1 Oct 76-30 Sep 77,
ADV 77 39P Edwards, Ward ; John, Richard ;
Stillwell, William ;
CONTRACT: N00014-76-C-0074, ARPA Order-3052

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with
University of Southern California, Los Angeles,
CA. Social Science Research Inst., Rept. nos.
SSR-77-6 and USC-01855-6-T.

DESCRIPTORS: *Decision making, *Decision theory,
Risk, Group dynamics, Human relations,
Mathematical models, Response, Scaling factors,
Probability distribution functions, Validation,
Computerized simulation, Monte Carlo method,
Behavioral science, Judgement (Psychology),
Regression analysis, Least squares method,
Reports

(U)

IDENTIFIERS: *Inference, Inference behavior,
Uncertainty

(U)

This report summarizes twelve months of research on
the technology of inference and decision.
Theoretical research and experimental work on three
major topics: elicitation of subjective
probabilities, multi-attribute utility theory, and
the application of decision technology, is discussed.
Experimental work showed that simple averaging of
individuals' probability judgments to form a group
judgment did not differ significantly from behavioral
interaction in final quality of the judgments as
evaluated by a quadratic scoring rule. Other
experimental work indicated that elicitation
techniques were of significant importance to the
quality of judgments. Response scales were found to
affect both the magnitude and veridicality of
probabilistic judgments. In the assessment of
subjective probability distributions elicitation
technique was found to interact with the type of
distribution used to generate the data in that biases
introduced in subjective probability distributions
varied as a function of the uncertain quantity being (U)

University of Southern California
A Criterion Validation of Multi-
attribute Utility Analysis and of
Group Communication Strategy
DESCRIPTIVE NOTE:
Organizational Behavior and
Human Performance 1980
Eils, Lee C., III
John, Richard S.

This study investigates the use of an external criterion for validating additive utility assessments under certainty. Utilities were elicited from 24 groups via consensus judgment for 10 hypothetical applicants for bank credit cards. The research design completely crossed two factors relevant to group utility assessment: (1) using a decomposition (MAUA) procedure or not, and (2) using a formal group communication strategy or not. The quality of each group's utility judgments was defined to be the Pearson product-moment correlation between the group's judged utilities and utilities output from a configural (non-linear) model used by Security Pacific National Bank in evaluating applicants for Master Charge. Group satisfaction measures were also obtained. The decomposition methodology and the group communication strategy both aided groups in making assessments that are more consistent with those of the bank model, which is based on a systematic collection and interpretation of a large amount of relevant data. Simplified procedures for obtaining weight parameters in the multiattribute utility analysis yielded better overall utilities than more complicated ratio-estimation techniques.

Theory Versus Practice in Risk
Analysis: An Empirical Study:
A Comment

DESCRIPTIVE NOTE:
The Accounting Review
July, 1976
Volume L1, Number 3
Fishburn, Peter C.

This article presents a
discussion of utility theory
and points out some
potential error in conclusions
drawn by W. Greer in an
earlier article in The
Accounting Review.

DDC REPORT BIBLIOGRAPHY , SEARCH CONTROL NO. 6HN29N

AD-A032 536 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Methodology for Subjective Assessment of
Probability Distributions. (U)

DESCRIPTIVE NOTE: Master's thesis.
SEP 76 157P Grayson, Anthony S. ; Lenclos,
Harold J. ;
REPT. NO. SLSR-13-76B

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement. *weapon
systems. Cost estimates. Probability. Risk. Air
Force planning. Methodology. Theses. Systems
management. Logistics management (U)

In the initial stages of development of a weapon
system it is impossible to know with complete
certainty what the final outcome of the weapon system
will be in terms of completion time, costs, and
performance. The authors describe the following
techniques for assessing subjective probability:
Choice-Between-Campes, Standard Lottery,
Modified Churchman-Ackoff, Delphi,
DeGroot Consensus, and Direct Estimation.
The following criteria are being used: ease of
application, adaptability and flexibility,
reliability and validity, time, removal of bias, and
miscellaneous. Based upon the content analysis, the
Standard Lottery technique is the technique which
best assesses the magnitude of uncertainty present in
a given weapon systems development effort. (U)

The Effects of Three Social Decision
Schemes on Decision Group Process
DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance
25, 97-106 (1980)
Green, Stephen G.; Taber, Thomas D.

An experimental study compared the effects of three group decision-making schemes. A nominal voting scheme produced the highest satisfaction with the group decision-making process, and the lowest amount of expressed negative socio-emotional behaviors, but also produced the lowest feelings of personal participation. A consensus scheme produced nearly the opposite results—with high felt participation, but also a high degree of negative socio-emotional behaviors, and low satisfaction with the group decision-making process. Apparently, the more structured nominal voting scheme reduces the interpersonal give-and-take that can lead to negative socio-emotional behavior, but that also gives a feeling of participation.

Theory Versus Practice in Risk
Analysis: An Empirical Study
DESCRIPTIVE NOTE:
The Accounting Review
July, 1974
Volume 49, Number 3
Greer, Willis R., Jr.

There appears to be substantial conflict between the decision processes used by actual decision makers and existing utility theory. The conflict seems to center around the inability of classical utility theory to deal effectively with situations where one or more contingent outcomes for a project are lower than some critical amount. Existing theory, therefore, incorrectly models practice.

Contributing factors in the apparent conflict may be internal inconsistency and a tendency decision makers have to be more averse to risk at the time of actual choice than their pre-decision statements would indicate.

Synergism in Group Decision Making
(How to Make the Whole Greater than
the Sum of the Parts)

DESCRIPTIVE NOTE: Personnel
Journal

Volume 58, No. 1: 12 and 13

Hall, Dr. Jay

This article gives some guidelines
for use by individuals to use when
operating as part of a group to
achieve consensus.

Synergy
DESCRIPTIVE NOTE: Manage
April, 1979
Hall, Dr. Jay

This article discusses various aspects of group decision making. As a result of a number of experiments involving decisions made by groups, Dr. Hall offers several guidelines to be used by group members in achieving a consensus.

Graduate School of Business Administration
The University of Michigan
Why Risk Analysis Isn't Working
DESCRIPTIVE NOTE: Long Range Planning
Volume 8, December, 1975
Hall, William K.

In this article the author argues that despite its popularity among researchers and managers alike, Risk Analysis as a management tool has not been successful. He postulates that in the end managers will give up attempting to make formal analysis of risks, substituting more effective means of living with the "results" of those risks as they arise.

The Multi-dimensional Aspects of
Risk

DESCRIPTIVE NOTE: The Journal
of Portfolio Management

Summer 1979

Hayes, Douglas A.

This article presents a discussion
of risk as it relates to portfolio
theory. The concept of considering
risk as multi-dimensional when
attempting to apply risk analysis
to portfolio management is discussed.

Defense Systems Management College
Risk Aversion VS. Technology
Implementation
DESCRIPTIVE NOTE:
November, 1977
Hersh, M. H.

Risk Analysis in Capital
Investment
DESCRIPTIVE NOTE:
Harvard Business Review
September-October, 1979
Volume 57
Hertz, David

'How can business executives make the best investment decisions? Is there a method of risk analysis to help managers make wise acquisitions, launch new products, modernize the plant, or avoid overcapacity? "Risk Analysis in Capital Investment" takes a look at questions such as these and says "yes"-by measuring the multitude of risks involved in each situation. Mathematical formulas that predict a single rate of return or "best estimate" are not enough. The author's approach emphasizes the nature and processing of the data used and specific combinations of variables like cash flow, return on investment, and risk to estimate the odds for each potential outcome. Managers can examine the added information provided in this way to rate more accurately the chances of substantial gain in their ventures. The article, originally presented in 1964, continues to interest HBR readers, the more than 153,000 reprints sold since then testify to the importance of this type of thinking on investment analysis. In a retrospective commentary, the author discusses the now routine use of risk analysis in business and government, emphasizing that the method can-and should-be used in any decision-requiring situations in our uncertain world.

Brigham Young University
Group Risk Taking In Military
Discussions
DESCRIPTIVE NOTE: The Journal
of Social Psychology, 1972, 88, 55-64
Higbee, Kenneth L.

Research on the risky-shift effect has indicated that groups are more risky than individuals. Since many decisions involving military and international policy are made by groups, some authors have warned us of the potentially dangerous effects of the risky shift in these areas, where increased risk might work against our best interests. However, most risky-shift research has used as a measure of risk the Choice-Dilemma Questionnaire (CDQ), a paper-and-pencil measure of hypothetical risk taking. Thus, the validity of generalizations from risky-shift findings to real-world military settings would be affected by the extent to which riskiness on the CDQ reflects riskiness in such settings. Two-man groups of male college students (assigned on the basis of similar CDQ scores) participated in a simulated international conflict. Subjects' CDQ scores were not related either to the actual level of riskiness of their military decisions, or to their perceived level of riskiness. Generalizations to real-world military decision making from risky-shift studies using the CDQ may not be warranted on the basis of currently available evidence, since the CDQ may not reflect actual military riskiness in the real world.

The Retail Buying Committee:
A Look at Cohesiveness and
Leadership

DESCRIPTIVE NOTE:

Journal of Retailing
Volume 55, Number 4
Winter, 1979
Hutt, Michael D.

Effective marketing strategy design requires a knowledge of buyer behavior at both the consumer and channel levels. Only limited research has been invested in studies of new-product buying in a channel context. Operationally, this segment is pivotal in determining the ultimate success or failure of the product. This study examines a particular form of organizational decision making-the retail buying committee.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. SHN29N

AD- 747 365 15/5 12/2

ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIV

Analysis of Risk for the Materiel Acquisition
Process. Part II. Utility Theory. (U)

DESCRIPTIVE NOTE: Final rept.,
MAY 71 43P Hwang, John D. ;
REPT. NO. SY-R2-71

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also report dated Nov 70, AD-
715 394.

DESCRIPTORS: (*ARMY EQUIPMENT, INVENTORY CONTROL),
(*DECISION THEORY, STATISTICAL ANALYSIS), ARMY
PROCUREMENT, DECISION MAKING, COST EFFECTIVENESS, GAME
THEORY, PROBABILITY DENSITY FUNCTIONS, THEOREMS (U)
IDENTIFIERS: RISK, STATISTICAL DECISION THEORY,
SYSTEMS ANALYSIS, UTILITY FUNCTIONS (U)

The paper is devoted to the subject of analysis of
risk for the materiel acquisition process. It is
emphasized that risk analysis must interface with
decision analysis to facilitate decision-making for
major developmental programs. A concise discussion
of utility theory, lotteries, and techniques to
elicit utility functions is presented, as well as a
set of utility axioms. The concepts are used for
the decision analysis of a hypothetical example.
(Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A045 771 5/10

DECISIONS AND DESIGNS INC MCLEAN VA

Prospect Theory. An Analysis of Decision Making Under Risk.

(U)

DESCRIPTIVE NOTE: Technical rept.,
APR 77 43P Kahneman, Daniel ; Tversky,
Amos ;
CONTRACT: N00014-76-C-0074, ARPA Order-3052

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: Prepared in cooperation with
Perceptronics, Inc. Eugene, OR. Decision
Research Branch, Rept. no. PTR-1042-77-4.

DESCRIPTORS: *Decision making, *Risk, *Decision
theory, Psychology, Mathematical models, Theory
IDENTIFIERS: Prospect theory, Decision
analysis

(U)

(U)

The theoretical basis of decision analysis is utility theory, which describes the principles upon which people wish to base their decisions. This article questions the validity of utility theory and offers an alternative, 'prospect theory.' In addition to providing evidence in support of prospect theory, this paper discusses its implications for the theory and practice of decision analysis. It suggests, for example, ways in which subtle changes in elicitation procedure can have marked effects on people's expressed values. (Author)

(U)

Factors Affecting Adoption Of A
Quantitative Method For R and D
Project Selection

DESCRIPTIVE NOTE:

Management Science

Volume 21, No. 2, October 1974

Maher, P. Michael; Rubenstein, Albert H.

In the field of research and development (R and D), "state-of-the-art project selection models are not being widely adopted. This paper reports on the results of an attempt to develop, test and evaluate systematically an R and D project selection technique in an operating R and D organization. The technique employed was a modified risk analysis model. The results suggest that an individual's assessment of the value of the data generated by an R and D project selection technique is an extremely important factor in determining his willingness to adopt the technique. The relative importance of two determinants of adoption: perceived changes in organizational processes resulting from the use of a project selection model and the importance of the strategies used to introduce a model into an organization, appear to run counter to the thinking of many management theorists who tend to emphasize the importance of the organizational process and the importance of the strategy for change.

The Effects of Feedback on Task
Group Behavior: A Review of
the Experimental Research
DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance
23, 309 - 338 (1979)
Nadler, David A.

Experimental research on the cueing and motivational effects of feedback on behavior in task groups is reviewed. The impact of feedback is seen as contingent on several factors including the nature of the feedback information (including level of aggregation, task/process focus, and evaluative content), the process of using feedback, individual differences among group members, and group task structure. Feedback is seen as contingently leading to affective and cognitive outcomes, including level of attraction to the group, pride in the group, motivation, defensive feelings, and acceptance of group problems. Feedback is also seen as potentially leading to behavioral outcomes such as task performance, membership behavior, and coping behavior. A preliminary model of the impact of feedback is constructed.

Improving the Quality of Group Judgment:
Social Judgment Analysis and the Delphi
Technique
DESCRIPTIVE NOTE: Organizational
Behavior and Human Performance,
24, 73-92 (1979)
Rohrbaugh, John

Previous research findings suggest that group judgment is superior to individual judgment, although groups fail to reach their full potential because of problems associated with the interaction process. Thus, groups perform at a level generally better than the competence of their average members, but rarely as well as their most proficient members. The current study explores two methods of group judgment making which have been developed to reduce the discrepancy between potential and actual group performance: social judgment analysis and the Delphi technique. These two methods are compared in a controlled experimental setting with regard to their potential both to significantly reduce group disagreement and to provide accurate judgments. The two methods were found to be equal in the quality of judgments produced. Social judgment analysis, however, was a significantly better method of reducing disagreement than the Delphi technique.

Making Meetings More Successful:
Plans, Formats, and Procedures
For Group Problem-Solving
DESCRIPTIVE NOTE: The Journal
of Business Communication
Volume 16:4
Seibold, David R.

This essay treats several aspects of group meetings and conferences: 1) steps in planning for chairing a meeting or conference; 2) possible formats, or general superstructures, for organizing sessions and facilitating group discussion and decision efforts; 3) alternative procedures for group problem-solving (Problem Census, Rational Reflection, Brain-storming, Buzz Groups, Nominal Groups, Delphi Method, Listening Teams, Role Playing, Two-Column Technique, RISK, and PERT). There is an example illustrating how these formats and procedures can be used conjointly.

The Supervisor's Survival Guide:
Being Group Leader
DESCRIPTIVE NOTE:
Supervisory Management
March, 1979
Volume 24
Thompson, Ken, Ph.D.
Pitts, Robert E., Ph.D.

This article presents information
about group behavior and some
guidance to supervisors as to how
to work with the group.

Investor Behavior:

Work or Play?

DESCRIPTIVE NOTE:

The Journal of Portfolio Management

Volume 6, No. 2

Weinflash, David

Conventional risk analysis assumes that man predictably seeks to maximize the greatest good. The measure of good comes from the theory of utility. The problem with this assumption is that man does not react in this fashion many times in the real world. Rather than being risk averse, man, in many circumstances finds pleasure in risky situations.

RISK Assessment Methodologies

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 746 245 15/5

ARMY MATERIEL SYSTEMS ANALYSIS AGENCY ABERDEEN PROVING
GROUND MD

Compendium on Risk Analysis Techniques. (U)

DESCRIPTIVE NOTE: Special pub.,
JUL 72 132P Atzinger, Erwin M. ; Brooks,
Wilbert U. ; Chennick, Michael R. ; Eisner, Brian
; Foster, Ward V. ;
REPT. NO. AMSAA-SF-4
PROJ: RDT/E-1-P-765601-MM-11
TASK: 1-P-765601-MM-1102

UNCLASSIFIED REPORT

DESCRIPTORS: (*LOGISTICS, *ARMY PROCUREMENT),
MATHEMATICAL PREDICTION, MANAGEMENT ENGINEERING,
DECISION MAKING, MONTE CARLO METHOD, STATISTICAL
ANALYSIS, MATHEMATICAL MODELS, NETWORKS (U)
IDENTIFIERS: BAYES THEOREM, STATISTICAL ANALYSIS,
*RISK ANALYSIS, SUBJECTIVE PROBABILITY, DELPHI
TECHNIQUE (U)

The evolution of risk analysis in the materiel
acquisition process is traced from the Secretary
Packard memorandum to current AMC guidance.
Risk analysis is defined and many of the existing
techniques are described in light of this definition
and their specific role in program management and
systems analysis activities. Sections are included
on subjective probability, Monte Carlo, Network
Analysis, and Bayesian Statistics. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A016 040 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Model to Predict Final Cost Growth in a
Weapon System Development Program. (U)

DESCRIPTIVE NOTE: Master's thesis,
AUG 75 173P Babiarz, Anthony S. ; Giedras,
Peter W. ;
REPT. NO. SLSR-49-75B

UNCLASSIFIED REPORT

DESCRIPTORS: *Weapon systems, *Cost analysis,
Procurement, Costs, Risk, Uncertainty, Delphi
techniques, Mathematical models, Computer programs,
Theses, Logistics, FORTRAN (U)
IDENTIFIERS: *Risk analysis, FORTRAN 4 programming
language (U)

The increasing cost growth within the DoD
military weapon system acquisition process has been
the object of attention for many years. With
limited resources and shrinking budgets a viable
technique to monitor and control cost growth is
needed. The reason for cost growth may be related
to the elements of uncertainty within a development
program. A conceptual model, previously developed
to cope with uncertainties in a weapon system
acquisition program, was used to determine its
applicability for use in the present study. The
model relates the concepts of entropy, information,
uncertainty and costs in an effort to predict final
costs based on a measure of uncertainty. The
measure of uncertainty is entropy, or a lack of order
in the information available to the program manager.
The model attempts to express final development
cost as a ratio of initial cost estimates to program
entropy. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 766 885 15/5 5/1

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

A Proposed Methodology for Weapon System
Development Risk Assessment. (U)

DESCRIPTIVE NOTE: Master's thesis.
JUN 73 14CP Bevelhymen, Herbert L. ;
REPT. NO. GSA/SM/73-3

UNCLASSIFIED REPORT

Available in microfiche only.

DESCRIPTORS: (*GOVERNMENT PROCUREMENT, WEAPON SYSTEMS),
COSTS, DECISION MAKING, UNCERTAINTY, STATISTICAL
ANALYSIS, THESES, MANAGEMENT PLANNING AND CONTROL (U)
IDENTIFIERS: LOGISTICS MANAGEMENT, NETWORK
ANALYSIS(MANAGEMENT), PERT, *RISK, COST OVERRUNS (U)

Formal risk analysis has become a required part of
the weapons acquisition process since 1969. Many
methods of quantitative risk assessment require
extensive data collection solely for risk purposes.
Frequent assessments thus become costly. The
thesis proposes a risk assessment methodology that
uses contractor-reported data extracted from the
standard Cost Performance Report and Schedule
Status Report. A graphical network of a
project is constructed using the symbology and logic
available with the Venture Evaluation and
Review Technique (VERT) computer routine.
Each network and is made to correspond with a
contract work breakdown structure element. The
marginal probability density functions of the network
and's are assumed to be Beta distributed. The
parameters of each and's time and cost distribution
are determined using the contractor's monthly revised
estimates for work breakdown element costs and
completion dates and applying the method of moments.
A test application on a weapons system currently in
full-scale development was conducted. The test
results, although inconclusive, did tend to show
promise and merit further application of the
methodology. (Author) (U)

Large Engineering Project
Risk Analysis
DESCRIPTIVE NOTE:
IEEE Transactions On
Engineering Management
August, 1979
Vol. Em. - 26, No. 3
Chapman, Chris B.

Abstract—This paper describes the current status of SCERT (Synergistic Contingency Evaluation and Response Techniques). SCERT is an attempt to provide a systematic approach to the planning and financial evaluation of large engineering projects involving significant risks. Its mathematical basis is a decision tree/semi-Markov process representation of a project. This basis is integrated with qualitative risk assessment procedures. The emphasis is preplanning positive responses to potential contingencies, the need to get approximate answers to the right questions, and the need to integrate specialist expert opinion of various kinds and more general seasoned intuition. Development took place at an academic level during 1976 as a consequence of discussions with potential users, which suggested the need to synthesize the main methodological features of two projects undertaken during 1975 by Acres Consulting Services Ltd. One was an assessment of the risks associated with alternative construction schedules for a gas pipeline from the high Arctic to the Canada-U.S. border. The other was an assessment of the risks associated with alternative bid packages for a fixed price contract to construct a thermal power station in Iraq. Development during 1977 has centered on a test-case application to a North Sea pipeline project.

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN23N

AD-A080 196 12/2 15/5

LOGISTICS MANAGEMENT INST WASHINGTON DC

Statistical Risk Properties of the Logistic
Support Cost Commitment,

(U)

DEC 79 121P Collins, Dwight E. ;
REPT. NO. LMI-ML900
CONTRACT: MDA903-77-C-0370

UNCLASSIFIED REPORT

DESCRIPTORS: *Logistics support, *Cost estimates,
*Operations research, Risk, Statistical analysis,
Costs, Reliability, Design to cost, Life cycle
costs, Cost models

(U)

In recent years, several new contractual arrangements have been devised to estimate, target, and track logistic support costs during the acquisition phase. One of these is a contractual mechanism known as a Logistic Support Cost Commitment (LSCC), sometimes referred to as a Support Cost Guarantee. The objective of the LSCC is to motivate the contractor to design his equipment to have reduced logistic support costs through increased reliability and maintainability (R&M) when fielded. This report documents research into the statistical properties of the LSCC. The LSCC utilizes one of a broad class of statistical estimators, which are complex mathematical functions of simpler estimators whose statistical properties are well known. In the LSCC case, the complex estimator is a cost function, and incorporates such simpler estimators as rates of occurrence, durations of activity, and physical distribution of activity. It also includes constant cost rates. The research documented is primarily mathematical. It does not treat in-depth the numerous qualitative issues regarding LSCC use.

(U)

University of Pennsylvania
A New Method for Risk Analysis
DESCRIPTIVE NOTE:
Sloan Management Review
Spring, 1979
Cozzolino, John M.

Commonly used methods for evaluating investments consider the monetary flows associated with a project and ignore the firm's ability or willingness to assume the business risk of the project. A new type of risk profile curve gives an objective measurement of the risk-adjusted value of a project. This new method can be combined with traditional investment evaluation techniques to give managers a tool to set, communicate, and maintain a consistent risk-tolerance policy.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A046 651 5/1 12/1 14/1

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

A Case Study in Risk/Decision
Analysis.

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 73 49P Crawford, Leslie P. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Risk analysis, *Cost analysis,
*Decision making, Resource management,
Retrofitting, Case studies, Trade off analyses,
Risk, Estimates, Cost effectiveness, Weapon
systems, Military procurement, Statistical analysis
IDENTIFIERS: Program management

(U)

(U)

The increasing emphasis being placed on risk analysis in DDO has made the subject a focal point for program managers. The individual services are required to estimate or subjectively determine the risk inherent in their programs by conducting a risk assessment. The case study developed in this report is an attempt to inject a quantification of risk based on the facts available and the use of probability and statistics. A decision analysis is then applied to assist the decision maker in definitizing his options on a dollar basis. Various trade-offs and evaluation criteria are used to transfer the degree of risk to this dollar base. Each cost schedule, and performance parameter is treated on an equal risk basis. (Author)

(U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A036 335 5/1 9/2

CALIFORNIA UNIV LOS ANGELES SCHOOL OF ENGINEERING AND
APPLIED SCIENCE

Project Management through Simulation. (U)

DEC 76 44P Feiler, A. M. ;
REPT. NO. UCLA-ENGR-75-119
CONTRACT: N00014-76-C-0112

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control,
*Systems analysis, *Critical path methods,
*Computerized simulation, *Risk analysis, *Network
analysis(Management), Models, Simulation (U)
IDENTIFIERS: Project management, (U)
Models: Simulational, Deterministic

The role of critical path network analysis in
project management is discussed. Specific
shortcomings of conventional, deterministic network
analysis techniques are outlined and examples are
given of the individual factors which contribute to
the overall optimism of deterministic analysis.
Computer simulation is offered as means of
developing realistic schedules, budgets and resource
requirements for projects where uncertainty and
performance variability are of significance.
(Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A045 758 12/2

PENNSYLVANIA STATE UNIV UNIVERSITY PARK COLL OF BUSINESS
ADMINISTRATION

A Survey of Multiattribute/Multicriterion
Evaluation Theories. (U)

DESCRIPTIVE NOTE: Interim rept.,
SEP 77 80P Fishburn, Peter C. ;
REPT. NO. TR-26
CONTRACT: N00014-75-C-0857

UNCLASSIFIED REPORT

DESCRIPTORS: *Decision theory, *Goal programming,
Utilization, Decision making, Risk analysis,
Bias, Assessment, Methodology, Criteria,
Stochastic processes, Dominance models, Economic
analysis (U)
IDENTIFIERS: WUNR047112 (U)

This report provides a comprehensive survey of
theories for the evaluation of decision alternatives
and/or consequences of decision that are
characterized by a number of attributes or
performance criteria. The evaluation theories are
classified under a certainty/risk/uncertainty
trichotomy and include varieties of utility theory,
noncompensatory preference structures, theories of
stochastic dominance, theories of risk, and many
others. More than 300 references are provided,
about half of which have appeared after 1970. The
survey also discusses various choice models for
multiattribute/multicriterion situations and includes
a concluding section on assessment methodology.
(Author) (U)

Pennsylvania State University
University Park College of
Business--ETC
Stochastic Dominance Without
Transitive Preferences
DESCRIPTIVE NOTE:
September, 1977
Fishburn, P. C.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 6HN29N

AD- 785 436 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

A Cost Growth Model for Weapon System
Development Programs.

(U)

DESCRIPTIVE NOTE: Master's thesis.

AUG 74 133P Glover, William L. ;Lenz,

John O. ;

REPT. NO. SLSR-22-74B

UNCLASSIFIED REPORT

DESCRIPTORS: *Military procurement. *Weapon systems.

*Costs. Logistics planning. Uncertainty. Risk.

Statistical analysis. Mathematical models.

Theses

(U)

IDENTIFIERS: Growth models

(U)

Much attention has been placed on cost growth in military weapon system acquisitions. The reasons for cost growth can be related to uncertainty relative to program costs, delivery dates and product reliability. A conceptual model has been developed to cope with the uncertainties in weapons acquisition programs. The model relates the concepts of entropy, information, uncertainty and costs, predicting final costs based on a measure of uncertainty, synonymous with risk in this study. The measure of uncertainty is entropy, or the lack of order in the information available to the program manager. The model expresses final costs as the ratio of initial cost estimates to program entropy. The authors develop and refine the model for application to weapon development programs.
(Modified author abstract)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. SHN29N

AD-A021 677 15/5 5/1

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

A Monte Carlo Risk Analysis of Life
Cycle Cost Prediction.

(U)

DESCRIPTIVE NOTE: Master's thesis,
SEP 75 186P Graves, Samuel B. ;
REPT. NO. GOR/SM/75D-6

UNCLASSIFIED REPORT

DESCRIPTORS: *Life cycle costs, *Logistics support,
*Risk, Contracts, Mathematical prediction,
Maintenance, Analysis of variance, Reliability,
Probability density functions, Theses, Simulation,
Monte Carlo method, Jet fighters

(U)

IDENTIFIERS: *Incentive contracts, F-16
aircraft

(U)

This study is an investigation of the uncertainties involved in the prediction and measurement of Life Cycle Costs. The particular treatment here analyzes Logistic Support Costs, which are a subset of the Life Cycle Costs. The Logistics Supportability Incentives which are embodied in the current General Dynamics F-16 contract are analyzed in the light of the stochastic uncertainties of prediction and measurement of Logistic Support Cost. A Monte Carlo Simulation model is developed which will approximate the uncertainties involved in obtaining a sample measurement of Logistic Support Cost in a fixed length test. The model output is applied to the problems of determining appropriate contractor rewards or penalties, investigating the feasibility of contractor strategies, and investigating the effect of various test lengths.

(U)

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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 2HN29N

AD- 715 394 15/5 12/2

ARMY WEAPONS COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Analysis of Risk for the Materiel Acquisition
Process. Part I. Fundamentals. (U)

DESCRIPTIVE NOTE: Final technical rept.,
NOV 70 76P Hwang, John D. ;
REPT. NO. SY-R6-70

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMY EQUIPMENT, INVENTORY CONTROL),
(*DECISION THEORY, PROBABILITY), STATISTICAL ANALYSIS,
ARMY PROCUREMENT, COST EFFECTIVENESS, INTEGRALS, RANDOM
VARIABLES, MANAGEMENT PLANNING AND CONTROL, SIMULATIO(U)
IDENTIFIERS: RISK, RISK FUNCTIONS, STATISTICAL
DECISION THEORY, SYSTEMS ANALYSIS, COMPUTERIZED
SIMULATION (U)

The paper is the first in a series devoted to the
subject of analysis of risk for the materiel
acquisition process. The objective of this
introductory paper is three-fold. First, risk
analysis is structured to show that it has close
affinity to systems analysis and adds a new
dimension, in terms of a probability measure, to
integrate the three dimensions of cost, time to
complete, and performance of a program in the
materiel acquisition process. Secondly, numerous
applicable techniques of statistical decision theory
are presented, plus decision tree analysis and
subjective judgment collection. Thirdly, methods
for risk analysis of the concept formulation and
contract definition phases of the acquisition cycle
are exhibited. Research problems are also mentioned
for future investigative efforts. Significant
payoffs from a risk analysis include the
identification of high risk areas, recommendations of
additional studies to fill data gaps for better
management decision making, a better basis for budget
allocation, as well as the discovery of additional
program alternatives. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 8HN29N

AD-B002 031 17/2 12/2

MARTIN MARIETTA AEROSPACE ORLANDO FLA COMMUNICATIONS AND
ELECTRONICS DIV

Integrated Tactical Communications System
(INTACS). Task III. Communications System
Effectiveness and Cost Methodology
Development.

(U)

DESCRIPTIVE NOTE: Final rept.

APR 74 240P

REPT. NO. CR-12822-1

CONTRACT: DAAG39-73-C-0248

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also Task 4 Supplement dated
Dec 74, AD-B002 032L.

DESCRIPTORS: (*Tactical communications, Integrated
systems), Army, Systems analysis, Methodology,
Cost effectiveness, Communications networks,
Systems engineering, Computerized simulation, Cost
analysis, Risk, Sensitivity, Trade off analyses

(U)

IDENTIFIERS: MRTF(Mid Range Time Frame),
Mid range time frame

(U)

The cost and effectiveness methodology developed in
Task III of the INTACS program offers a direct,
dependable, and flexible means for evaluating the
capabilities and cost of the candidate mid range time
frame Army communications systems concerned. At
the same time, it constitutes an effective tool for
ranking these systems further on the basis of
technological risk. Thus, the methodology developed
will facilitate the selection of a preferred system
as intended. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A007 276 12/2 5/1

CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER

Planning and Control under Risk.

(U)

DESCRIPTIVE NOTE: Final rept. 16 Jun 71-30 Jun 74,
JUN 74 10P Jewell, William S.; Oliver,

Robert M.; Ross, Sheldon M.;

CONTRACT: DA-31-124-ARO-D-331

PROJ: DA-2-0-014501-8-14-C

MONITOR: ARO 5307.86-W

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control.
*Risk. Dynamic programming. Stochastic processes.
Mathematical models. Bayes theorem.
Computations

(U)

A variety of different research efforts have been supported in the past three years. This research falls in the following areas: (1) Theory and computation of optimal policies in dynamic programming risk problems; (2) Applied stochastic processes; (3) Development of models for institutional operating policies; and, (4) Linearized Bayesian estimation models. A summary of the research effort in each of the above areas is presented.

(U)

DCC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A037 013 12/2 5/1

CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER

Planning and Control under Risk.

(U)

DESCRIPTIVE NOTE: Final rept.,

AUG 76 31P Jewell, William S. ;

CONTRACT: DAGC04-75-G-0163

MONITOR: ARG 12549.17-M

UNCLASSIFIED REPORT

DESCRIPTORS: *Management planning and control, *Risk analysis, Decision making, Stochastic processes, Problem areas, Data acquisition, Estimates, Optimization, Policies, Bayes theorem, Mathematical models

(U)

IDENTIFIERS: Credibility

(U)

This report describes work in the modelling of stochastic phenomena and the development of decision-making techniques under risk and uncertainty. Research areas which received major emphasis were (1) Basic risk decision models, with emphasis on determining the structure of optimal policies and examining the implications of different risk objectives; (2) Problems of data collection, estimation, and updating for realistic decision models. (Author)

(U)

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DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A055 055 12/2 5/1 5/10

CALIFORNIA UNIV BERKELEY OPERATIONS RESEARCH CENTER

Planning and Control Under Risk. (U)

DESCRIPTIVE NOTE: Final rept. 1 Nov 76-Nov 77.

NOV 77 29P Jewell, William S. ;

CONTRACT: DAAG29-77-G-0040

MONITOR: ARO 14240.7-M

UNCLASSIFIED REPORT

DESCRIPTORS: *Operations research, *Management planning and control, *Decision making, Risk, Bayes theorem, Stochastic processes, Military operations, Estimates, Mathematical models, Probability, Decision theory, Parametric analysis, Data acquisition (U)

This is the Final Report in a twelve-year effort to model stochastic phenomena and develop decision-making techniques under risk and uncertainty. Recent research areas which received major emphasis were: (1) Basic risk decision models, with emphasis on determining the structure of optimal policies in the face of unknown parameters in the relevant risk distributions; and (2) Data collection and parameter estimation with emphasis on linearized Bayesian methods. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 767 871 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
ENGINEERING

Risk Assessment. (U)

DESCRIPTIVE NOTE: Master's thesis,
JUN 73 190P Lenox, Hamilton T. ;
REPT. NO. GSA/MA-73-3

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY PROCUREMENT, UNCERTAINTY),
STATISTICAL ANALYSIS, DECISION THEORY, PROBABILITY
DENSITY FUNCTIONS, COSTS, ECONOMICS, SYSTEMS
ENGINEERING, THESES (U)
IDENTIFIERS: *RISK, BAYES THEOREM, PARAMETER
ESTIMATION, NETWORK ANALYSIS(MANAGEMENT) (U)

Risk assessment became an integral part of the
OOD system acquisition process in 1969. The
primary effort of the paper was directed at exploring
past attempts to quantify risk, and while the
qualitative measurement of risk is mentioned, it is
not explored in any depth. An attempt is made to
define or describe the manner in which risk analysis
varies throughout the system acquisition life cycle
and a methodology using Bayes' Theorem is
presented for the quantification and updating of risk
in an on-going program. The methods of estimating
parameters and their usefulness in a formal
analytical process are discussed. The probability
density function best transmits the uncertainty
associated with an estimate and lends itself more
readily to the analytical techniques than other
methods of estimation. (Modified author
abstract) (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B034 709L 14/1 5/1

ARMY AVIATION RESEARCH AND DEVELOPMENT COMMAND ST LOUIS
MO

Total Risk Assessing Cost Estimate
(TRACE), an Evaluation. (U)

DESCRIPTIVE NOTE: Interim rept.,
FEB 79 48P Lilge, Ralph W. ;
REPT. NO. USAAVRADCOM-TR-79-8

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Contractor Performance Evaluation; Feb 79. Other
requests for this document must be referred to Commander,
Army Aviation Research and Development Command,
Attn: DRDAV-BCD, P.O. Box 209, St. Louis,
MO 63166.

DESCRIPTORS: *Cost estimates, *Research management,
*Risk, Cost analysis, Computerized simulation,
Computer programs, Parametric analysis, Time
series analysis, Catastrophic conditions, Decision
making, Methodology, Probability (U)
IDENTIFIERS: Sensitivity analysis (U)

This report discusses the need for cost realism in
the estimates for Research and Development (R
and D) programs, the management reserve as one
method previously used to manage cost growth, some of
the objections that have been raised concerning the
use of the management reserve, the historical
implementation of the Total Risk Assessing
Cost Estimate (TRACE) which was developed at
least partially in response to those objections, and
the relationship of TRACE to other cost estimates
such as the Baseline Cost Estimate (BCE) and
the Independent Parametric Cost Estimate
(IPCE). The report also describes several methods
for developing a TRACE, some of which have not been
proposed previously. But in so doing, it is not the
intention of this report to provide a handbook or
manual describing how to prepare a TRACE in detail.
Rather, this report presents a critical appraisal
of the TRACE program wherein several observations
are made, some of which are based upon actual
experience at AVRADCOM. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 729 223 15/5 14/1 12/2

AIR FORCE ACADEMY COLO

Final Report of the USAF Academy Risk
Analysis Study Team.

(U)

AUG 71 121P Lochry, Robert R. ;Hensley,
R. D. ;Flammen, Philip ;Smith, Donald R. ;
Head, Richard G. ;

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMED FORCES PROCUREMENT, *COST
EFFECTIVENESS), PROBABILITY, MANAGEMENT ENGINEERING,
WEAPON SYSTEMS, UNCERTAINTY
IDENTIFIERS: *RISK

(U)

(U)

The study investigates a method of reducing cost growth and improving quality in the weapon system acquisition process. It investigates a new management process, 'formal risk analysis.' Risk is the probability that a project will not be completed within specified time, cost and performance constraints by following a specified course of action. Risk assessment is an estimate of the risk associated with a particular course of action. Risk management is the generation of alternative courses of action for reducing risk. Risk analysis is the larger process of combining risk assessment and risk management in order to examine factors affecting the risk of acquiring a system. It is the purpose of the study to identify what a risk analysis is, how it can be accomplished, who should accomplish it and where it fits in the management structure for weapons systems acquisition.

(Author)

(U)

VERT:

A Risk Analysis Tool for Program Management

DESCRIPTIVE NOTE: Defense Management
Journal

May-June, 1979

Mann, Greg A., Major, USAF

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A035 482 5/1 5/3 15/3

OKLAHOMA UNIV NORMAN

A Conceptual Cost Model for Uncertainty
Parameters Affecting Negotiated, Sole-
Source Development Contracts.

(U)

DESCRIPTIVE NOTE: Doctoral thesis.
71 201P Martin, Martin Dean ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract proposals, *Cost models,
Weapon system effectiveness, Uncertainty, Economic
analysis, Cost overruns, Risk analysis,
Negotiations, Military procurement, Defense
planning

(U)

IDENTIFIERS: Sole source contracts

(U)

Attention was placed on cost growths as related to the acquisition of weapons systems by the military services. Uncertainties exist relative to program costs, delivery dates, and product reliability. The purpose of this study is to construct a model which will assist in coping with uncertainties affecting cost. Research and development procurement is unique. A goal is purchased, not a hardware item. Vague specifications may cause contract costing problems. The weapons acquisition process encompasses concept formulation, contract definition, engineering development, and production and operation. As a scientific concept traverses the continuum from concept formulation to production, uncertainties are reduced. For this study, uncertainty cannot be distinguished from risk. Uncertainty may be classified as either anticipated for unanticipated. Each of these is classified as either exogenous or endogenous. Uncertainty is the absence of information, which may be thought of as a commodity. In this capacity, information may be described and measured. Information gleaned from the internal and external environments will permit the reduction of uncertainty. The military services have attempted to cope with uncertainty by the use of incentives and contractual arrangements. The relationship between the entropy, information, uncertainty, and cost parameters enables a conceptual cost model to be developed. Entropy is a measure of information in a system. The term refers to

(U)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
REPORT NUMBER JCAP-DM-T-102	DO NOT ACCESSION NUMBER	RECIPIENT'S CATALOG NUMBER	
1. USER/ANALYSTS' MANUAL FOR THE Venture Evaluation and Review Technique (VERT)		PERIOD COVERED Final Report	Indefinite
2. PERFORMING ORGANIZATION NAME AND ADDRESS G. L. Moeller 0 Gerald L. Moeller		PERFORMING ORG. REPORT NUMBER	11/ 04 79
3. CONTROLLING OFFICE NAME AND ADDRESS Decision Models Directorate Joint Conventional Ammunition Program Coordinating Group, Rock Island, IL 61299		SECURITY CLASS. OF THIS REPORT	Unclassified
4. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		5. SECURITY CLASS. OF THIS REPORT Unclassified	

ABSTRACT

This Users'/Analysts' Manual provides information in sufficient detail to permit installation and application of the VENTURE EVALUATION AND REVIEW TECHNIQUE (VERT). VERT is a computerized, mathematical oriented simulation network technique designed to model decision environments under risk. Historically, VERT has been used principally to assess the risks involved in the undertaking of a new venture, as well as in the estimation of future capital requirements, control monitoring, and overall evaluation of on-going projects, programs, and systems. Modeling is accomplished with a small set of easily comprehended operators which readily facilitates the structuring of a symbolic pictorial network layout of the system under study. VERT is an adaptive tool, thereby allowing the scope and level of abstraction to rest almost entirely in the hands of the analyst. Thus, modeling can be accomplished on a one-for-one basis, whereby one real world event and activity is correspondingly represented symbolically as one event and activity in the VERT network; or, modeling can also be accomplished on a compressive basis whereby a multitude of real world events and activities are compressed into the symbolic representation of a few events and activities in the VERT network.

A Novel Approach for
Introducing Risk Analysis
DESCRIPTIVE NOTE:
Managerial Planning
July-August, 1978
Volume 26, Number 1
Pekar, Peter P., Jr.
Ellis, Darryl J.

The questions facing management in determining which capital project should go first are: What precise results can be expected? What information must be estimated to obtain results? Is there a way to get basic agreement on key factors such as -- demand, prices, costs, insurance coverage and so on? And how is return on invested capital measured?

Current conventional methods are one dimensional. The reason is that estimates made to depict future occurrences are just that, estimates. Because uncertainty encompasses these estimates, all calculations prove to be self-defeating. Even estimates derived independently from individual specialists in the corporate structure are subject to question. Information gathered from numerous sources is meaningless if not logically descriptive of future results. For these reasons, the described simulation approach has the inherent advantage of simplicity in depicting reality. However, it requires management support in wanting a portrait of the risks and rewards; as well as expert follow-through on the part of the planners. The technology to simulate has already been developed and is easy to use: all that is necessary is management's need and the ability to analyze uncertainty.

Federal Standards in Risk Analysis
and Contingency Planning

DESCRIPTIVE NOTE:

Data Management

Volume 18

Reed, Susan K.

Katzke, Stuart W.

The requirement to perform risk analysis for Federal agencies exists now but the methodology is optional. Risk analysis technology is in an evolutionary stage. In evaluating various methods, it is noted that many of the benefits of a risk analysis are intangible.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-8015 709L 14/1 12/1 9/5

MANTECH OF NEW JERSEY CORP NEW SHREWSBURY

Relationship Between Cost and Schedule
Risk.

(U)

NOV 76 24P
CONTRACT: DAAB07-76-D-6137

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 27 Dec 76. Other requests for
this document must be referred to Commander, Army
Electronics Command, Attn: DRCPM-RBS, Fort
Monmouth, N. J. 07703.

DESCRIPTORS: *Costs, *Scheduling, *Risk analysis,
Electronic equipment, State of the art, Delay,
Normal distribution, Boundedness, Overruns,
Probability density functions, Gamma distribution,
Development costs, Approximation(Mathematics),
Remote detectors, Ground sensors, Surveillance,
Monitors

(U)

Among the problems involved in estimating the cost
of development of a state-of-the-art electronic
component are the risks inherent in its development.
Technical risk is the risk that it may not be
possible to design, develop and construct an item
that conforms to the mission parameters by the
specified date. Schedule risk is the possibility
that the development time may exceed the agreed-upon
schedule. These two terms are not disjoint; in
fact, it may be said that technical risk is actually
part of the schedule risk, since the possibility of
not being able to develop an item at all is but one
of the factors that may contribute to a schedule
overrun. Once a development time and schedule risk
have been estimated, it remains to estimate cost,
using the assumed level of effort. In this paper it
is argued that the procedure for cost estimation
commonly used should be modified to give increased
accuracy, and methods are developed for so doing.
Methods are also developed for computing the cost
estimates for altered values of assumed risk.

(U)

York University
Conditional Risk Analysis
DESCRIPTIVE NOTE: Decision Sciences
Volume 9, 1978
Saipé, Alan L.

ABSTRACT

This paper introduces conditional risk analysis as a new approach to extend the standard risk analysis method of Hertz. An exercise in profit planning is used to illustrate the special features of conditional risk analysis: total risk measurement, risk decomposition, factor outcome analysis and variable significance analysis. Mathematical expressions are presented for performing the various analyses.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A012 886 5/1 9/2

MASSACHUSETTS INST OF TECH CAMBRIDGE OPERATIONS RESEARCH
CENTER

An Interactive Computer Program for
Assessing and Using Multiattribute Utility
Functions.

(U)

DESCRIPTIVE NOTE: Technical rept.,
JUN 75 133P Sicherman, Alan ;
REPT. NO. TR-111
CONTRACT: N00014-67-A-0204-0056
PROJ: NR-047-104, MIT-OSP-73787

UNCLASSIFIED REPORT

DESCRIPTORS: *Decision making. *Computer programs,
Risk, Uncertainty, Probability density functions,
Mathematical models. Theses

(U)

IDENTIFIERS: *Utility functions, Preferences,
Sensitivity analysis, MUFCAP computer program

(U)

This report presents a computer package designed to facilitate the assessment and use of a decision maker's utility function for multiple objectives. The package provides routines for (1) specifying the decision maker's preferences over multiple criteria, (2) treating uncertainty in the consequences resulting from a decision, (3) ranking alternative courses of action in order of preference, and (4) studying the effects changes in preferences or uncertainty estimates may have upon the ranking of alternatives. The routines are designed to be applicable in a variety of problem contexts. The paper is organized as follows. The decision analysis approach which provides the theoretical basis for the program is summarized. This is followed by a description of existing methods for multiattribute utility function assessment and use. Then the computer package is presented and compared with the aforementioned methods. Applications of the package to several problems are illustrated and areas for future improvement and research are suggested.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A024 198 15/5 12/2

GEORGIA INST OF TECH ATLANTA SCHOOL OF INDUSTRIAL AND
SYSTEMS ENGINEERING

An Application of Multivariate Discriminant
Analysis and Classification Procedures to
Risk Assessment in Operational Testing. (U)

DESCRIPTIVE NOTE: Master's thesis.
JUN 75 134P Simms, Edward Dewey, Jr;
CONTRACT: DAAG39-75-C-0097

UNCLASSIFIED REPORT

DESCRIPTORS: *Operational test and evaluation,
*Risk, *Multivariate analysis, Discriminate
analysis, Mathematical models, Military procurement,
Sampling, Theses (U)

This research develops a methodology which
determines an index used in the assessment of risk in
Operational Testing. The risk assessment
problem examined is that of preference statements
regarding competing systems. In order to evaluate
the competing systems, a multivariate statistical
analysis of the systems is undertaken. Through the
analysis of the multivariate distributions of each
system and the overlap of these distributions, the
index of risk is determined. Thus the index of risk
is a measure of similarity of the competing
systems. (U)

Stanford University
Department of Operations
Research
On the Risk-Sensitive Optimality
Criteria for Markov Decision
DESCRIPTIVE NOTE:
June 1975
Sladky, K.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A044 355 12/2 5/9

ARMY ENGINEER WATERWAYS EXPERIMENT STATION VICKSBURG
MISS

Operations Research/Systems Analysis. (U)

DESCRIPTIVE NOTE: Miscellaneous paper.
JUN 69 37P Smith, James F. ;
REPT. NO. WES-MP-T-69-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Operations research, *Systems analysis, *Courses(Education), Decision making, Trade off analyses, Risk analysis, Cost effectiveness, Mathematical models, Dynamic programming, Heuristic methods, Decision theory, Delphi techniques, Computer applications, Research management, Army research (U)

Systems analysis represents an approach to, or a way of looking at, complex problems of choice under uncertainty. It offers a means of discovering how to design or to make effective use over time of technologically complex structure in which the different components may have apparently conflicting objectives: that is, an approach to choosing a strategy that yields the best balance among risks, effectiveness, and costs. Its purpose is to place each element in its proper context so that in the end the system as a whole may achieve its aim with a minimal expenditure of resources. Thus systems analysis is a common sense approach to problems of decision. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 2HN29N

AD-A047 620 5/1 9/2

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

VERT - A Risk Analysis Technique for
Program Managers.

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 77 34P Thomas, Thomas N. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Management, *Risk analysis,
*Decision making, Computerized simulation, Network
analysis(Management), Cost analysis, Time
dependence, Assessment, Uncertainty, Scheduling,
Probability, Management information systems,
Computer applications, Military procurement,
Acquisition

(U)

IDENTIFIERS: Program management, *Venture
Evaluation Review Technique, Vert(Venture
Evaluation Review Technique)

(U)

This report describes the capabilities of the
VERT(Venture Evaluation and Review
Technique) risk analysis technique and reviews
its current applications in support of the program
manager (PM). PM's are continuously faced with
making decisions without complete certainty of their
impact. These decision situations involve certain
risks or probabilities concerning the time, cost and
technical performance effects. New techniques have
been evolving to assist decision makers (e.g.,
PM's in this risk environment. VERT is a network
simulation modeling technique recently developed to
provide this assistance. From information collected
through interviews with Army and Navy personnel
supporting PM's, a profile of current VERT
applications and their effectiveness is developed.
Applications discussed vary from the support of
major programs like the Advanced Attack
Helicopter to smaller efforts like the Platoon
Early Warning System.

(U)

Incremental Analysis Under
Conditions of Uncertainty
DESCRIPTIVE NOTE:
Managerial Planning
May-June, 1978
Volume 26, Number 6
Thornton, Fred A.

In recent years statistical techniques have become a significant factor in the planning and decision making of managers. The use of decision theory in business problem solving is becoming widespread. Thus, managers need to recognize and understand various quantitative techniques which could help them in arriving at difficult decisions. The purpose of this article is to present some of the various applications of decision theory which have been put forth in recent years by writers. These ideas should help managers to identify particular situations in their own companies where such techniques might benefit them and to help them understand the applicability and value of such techniques.

DOC-REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N
AD-A036 327 5/3 12/1

COCKERHAM (JOHN M) AND ASSOCIATES INC HOPWELL VA

US Army Total Risk Assessing Cost
Estimate (TRACE) Guidelines.

(U)

DESCRIPTIVE NOTE: Technical rept.

DEC 76 94P

CONTRACT: DAAH01-76-C-1088

PROJ: 1W362303A214

MONITOR: RC 77-3

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost estimates, *Army budgets, *Risk
analysis, Network flows, Scheduling, Uncertainty,
Flow charting, Allocations, Cost overruns

(U)

IDENTIFIERS: Trace analysis, *Total risk assessing
cost estimates, AS214, PE62303A

(U)

This report describes the background, logic, and
purpose of the TRACE concept. Some basic
methodologies for conducting TRACE analyses are
described and illustrated. Procedures to be
followed for obtaining risk capital are also
described and illustrated. (Author)

(U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EHN29N

AD-A041 467 14/1 5/1

ARMY WAR COLL CARLISLE BARRACKS PA

Implementation of Risk Assessment in the
Total Risk Assessing Cost Estimate
(Trace).

(U)

DESCRIPTIVE NOTE: Study project rept.,
MAY 77 83P Venzke, Gene A. ;

UNCLASSIFIED REPORT

Availability: Microfiche copies only.
DESCRIPTORS: *Cost estimates, *Risk analysis,
*Systems management, Probability distribution
functions, Research management, Cost models
IDENTIFIERS: TRACE (Total risk assessment cost
estimate), Total risk assessment cost
estimate

(U)

(U)

The concept of the Total Risk Assessing Cost Estimate (TRACE) was articulated by the ASA (R and D) on 12 July 1974. It is a means of explicitly accommodating the unforeseen and unidentifiable costs which characterize research and development projects. The TRACE is required to possess the property that it is an estimate of the 50th percentile of the project cost probability distribution. Unfortunately, early attempts to implement the TRACE met with limited success. A formalized study was undertaken to develop adequate techniques and two candidate methodologies emerged. One of the approaches, the TRACE Network Model, is extremely promising. The second technique, TRACE Risk Tabulation, can be improved upon by a modification involving computer generation of the imbedded probability distribution. There remain some problems in 'educating' users of the value of the TRACE, and the TRACE concept suffers from some inherent shortcomings. It is recommended that the new techniques for developing the TRACE be implemented, along with some ancillary actions to support the implementation and enhance the usefulness of the TRACE. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 8HN29N

AD- 768 136 15/5 5/1

ARMY MATERIEL COMMAND TEXARKANA TEX INTERN TRAINING
CENTER

Implementation of the Feedback Capability to
RISCA.

(U)

MAY 73 117P watts, Robert J. ;
REPT. NO. USAMC-ITC-1-73-25

UNCLASSIFIED REPORT

DESCRIPTORS: (*MILITARY PROCUREMENT; COSTS), MANAGEMENT
PLANNING AND CONTROL, PROBABILITY, DECISION MAKING,
FEEDBACK, COMPUTER PROGRAMS, STATISTICAL ANALYSIS, (U)
IDENTIFIERS: RISCA COMPUTER PROGRAM, *COST ANALYSIS,
RISK, PERT, NETWORK ANALYSIS(MANAGEMENT), LOGISTICS
MANAGEMENT (U)

The research is designed to expand the capabilities
of the simulation computer program, RISCA (Risk
Information System for Cost Analysis).
RISCA has been developed for the risk analysis
educational effort at the United States Army
Logistics Management Center (ALMC). This
computer program facilitates the analysis of systems
that are representable by a general class of network
structures by performing a Monte Carlo simulation
of the system. Thus, RISCA provides the user
with the capabilities of investigating the effects of
modifying an acquisition system or comparing one
acquisition system against alternate systems.
RISCA's most apparent limitation, however, is its
lack of a feedback capability. The purpose of this
research will be to eliminate this limitation. An
effort will also be made to revise the method of
activity and event sequencing performed by the
computer program during the simulation. This last
change will be made to reduce the time to simulate
systems with RISCA. The final success of
expanding the capabilities of RISCA will be
demonstrated by some example feedback networks.
(Author) (U)

Using Risk Analysis Methods
DESCRIPTIVE NOTE:
Data Management
January, 1977
Volume 15
Weiss, Harvey

In attempting to answer questions about what is being received from a company change, questions must be answered concerning (1) Why change, (2) operational aspects of a change, and (3) methods used in a change. Risk analysis is a method that may be used to answer questions in these areas.

RISK Analysis Examples

DGC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 777 585 15/5

AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHOOL OF
SYSTEMS AND LOGISTICS

Quantitative Risk Assessment: A Test
Case.

(U)

DESCRIPTIVE NOTE: Master's thesis,

MAR 74 130P Amdor, Stephen L. ; Kilgore,

Roy R. ;

REPT. NO. GSA/SM/74-1

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement, *Risk,
Logistics planning, Weapon systems, Acquisition,
Analysis of variance, Regression analysis,
Computer programs, Theses

(U)

Since the requirement for formal risk management in
all major development programs, several methodologies
have been suggested but few have been implemented
with persistence. The Air Force Academy
Risk Analysis Study Team suggested that a
quantitative risk assessment technique based on
network simulation and subjective probability
estimates could be used to assess risk in the three
primary development variables: cost, schedule, and
technical performance. The thesis attempted to
determine the feasibility and practicality of
applying such a methodology to the A-10 Full
Scale Development Program for cost and schedule
variables only. (Modified author abstract)

(U)

CDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. SHN29N

AD-8011 925L 17/9 15/5

MANTECH OF NEW JERSEY CORP NEW SHREWSBURY COMMUNICATIONS
AND SYSTEMS OPERATION

AN/TPQ-36 Mortar Artillery Locating Radar
Transport Configuration Decision Risk
Analysis.

(U)

DESCRIPTIVE NOTE: Final rept.

JAN 75 264P

CONTRACT: DAAB07-74-D-5021

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; 30 Jun 76. Other requests for
this document must be referred to Commander, Army
Electronics Command, Attn: DRCPM-MALR-LM,
Fort Monmouth, N. J. 07703.

DESCRIPTORS: *Artillery locator radar, *Mortar
locator radar

(U)

IDENTIFIERS: AIR TRANSPORTATION, AN/TPQ-36, ARTILLERY,
CARGO AIRCRAFT, COSTS, C-130 AIRCRAFT, DECISION
THEORY, MALOR(MORTAR ARTILLERY LOCATING RADAR), MORTAR
ARTILLERY LOCATING RADAR, MORTARS, OFF ROAD TESTS,
POSITION FINDING, RADAR, RISK ANALYSIS, TRANSPORT

(U)

This Decision Risk Analysis (DRA) responds
to the task of determining the best transport
configuration for the transport of the AN/TPQ-36
Mortar Artillery Locating Radar (MALOR)
when this system is deployed to the field during the
1980-1985 time period. From the outset and
continuing through the DRA processes, the systems
interrelationship of transport was valued as the
imperative to govern analysis and evaluation of
alternative transport configurations. Any viable
alternative must have the capacity to contain total
AN/TPQ-36 loads in a one-time lift. The
capacity of fully qualified alternatives must be
adequate to accommodate growth in weight and linear
dimensions. Also viable alternatives must be
capable of moving AN/TPQ-36 loads commensurate
to MALOR mission and mission environmental
criteria. A fully qualified candidate must be
capable of extended cross-country operations and air
transportability by C-130 Cargo Aircraft. The
AN/TPQ-36 MALOR Transport Configuration DRA
has demonstrated the suitability of alternative
vehicles as a basis for choosing the best transport

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BRN29N

AD-A021 189 19/1 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the 155mm Cannon-Launched
Guided Projectile. (U)

JAN 76 15P Beeson, James B.; Thier,
Norman H.; Netzler, Martin, Jr;
REPT. NO. AMSAR/SA/N-38

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-A019 932.

DESCRIPTORS: *Guided projectiles, *Risk analysis,
Gun launchers, Network flows, Contract
administration, Statistical distributions, Cost
analysis, Scheduling (U)
IDENTIFIERS: 155 MM projectiles (U)

A risk analysis of the schedule and cost associated
with the development of the Army 155mm CLGP was
performed. The time frame considered for this
analysis is 'Begin Engineering Development' in
July 1975 to 'Multi-Year Buy'. This
analysis is an extension of one performed in Dec 74
and is in preparation for an ASARC/Dsarc 3.
The VERT risk analysis technique was employed to
perform the analysis. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N
AD-B034 225L 9/1 17/2

NAVAL AVIONICS CENTER INDIANAPOLIS IN

Technical Risk and Life-Cycle Cost (LCC)
for the BISS Imaging Communications RF
Coaxial Cable Subsystem.

(U)

DESCRIPTIVE NOTE: Final rept. for FY 78,
DEC 78 4SP Bellinger, Donald K. ;
Bullock, Gary L. ;
REPT. NO. NAC-TR-2196

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; Dec 78. Other requests for
this document must be referred to Commander, Electronic
Systems Div., Attn: BISSPO, Hanscom AFB,
MA 01731.

DESCRIPTORS: *Coaxial cables, *Radiofrequency
cables, Life cycle costs, Risk, Communication
equipment, Video signals, Image processing,
Demodulators, Modulators, Cost estimates,
Transmission lines

(U)

This report addresses the technical risks
associated with, and the Life Cycle Cost
(LCC) Analysis, for the BISS imaging
communications RF coaxial communications subsystem.
Technical risk is defined along with a description
of the subsystem operation. This is followed by
what is felt the technical risks are for the
development of the coaxial cable subsystem equipment.
In the area of LCC, a link length of two miles
was assumed for the analysis. The calculations were
made for a minimum of 50 deployed subsystems and a
maximum of 250 deployed subsystems. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B010 641L 19/7 14/1 9/2

ARMY MISSILE COMMAND REDSTONE ARSENAL ALA SYSTEMS ANALYSIS
OFFICE

Improved LAW Cost and Schedule Risk
Analysis. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 75 26P Carodine, Frederick ; Esslinger,
William H. , Jr.; Laube, Hannes ; Blue, David
L. ;
REPT. NO. C-TR-75-14

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Contractor Performance Evaluation; Oct 75. Other
requests for this document must be referred to Commander,
Army Missile Command, Attn: ILAW Project
Office, Redstone Arsenal, Ala. 35899.

DESCRIPTORS: (*Rockets, Cost analysis),
(*Computer programs, Risk analysis), (*Antitank
ammunition, Uncertainty), Spin stabilized
ammunition, Critical path methods, Systems
engineering, Assessment, Probability (U)

IDENTIFIERS: LAW(Light Antitank Weapons),
Light antitank weapons, W-72 rockets(66-WM),
Law rockets, Design, Statnet computer program (U)

This risk analysis evaluates the schedule
uncertainty and the cost uncertainty in the
Engineering Development phase of the Improved
LAW program. The 'STATNET' computer program was
used to assess these uncertainties. (Author) (U)

AD-A098 934

DAYTON UNIV OH SCHOOL OF ENGINEERING

F/6 5/1

PENETRATION STUDY: BEHAVIORAL ASPECTS OF DECISIONS UNDER UNCERT--ETC(U)

JAN 80 D RIPPY, P SWEENEY

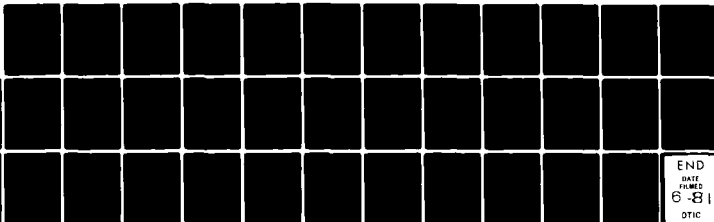
F33615-80-C-5139

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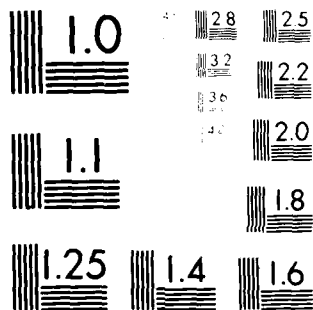
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DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B022 209L 19/7 5/1

ARMY MISSILE COMMAND REDSTONE ARSENAL ALA SYSTEMS ANALYSIS
OFFICE

VIPER Schedule Risk Analysis. (U)

JAN 77 4SP Carodine, Frederick ;
REPT. NO. C-TR-77-2

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; Jan 77. Other requests for
this document must be referred to Commander, Army
Missile Research and Development Command, Attn:
DROMI-T1, Redstone Arsenal, AL 35809.

DESCRIPTORS: *Viper rockets, *Antitank weapons,
*Network analysis(Management), Test and
evaluation, Scheduling, Risk analysis, Cost
estimates, Delay, Uncertainty, Probability,
Research management (U)

This document presents an analysis of the research
in the development of the Viper Antitank
Rocket, indicating the schedule of research, and
items which could possibly affect, and delay, that
schedule. (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A051 919 17/7

ARINC RESEARCH CORP SANTA ANA CALIF

Cost/Schedule Risk Analysis of Engineering
Development Phase for Army User Equipment
of GPS.

(U)

DESCRIPTIVE NOTE: Technical note.

APR 77 33P

REPT. NO. W77-1172-TN01

CONTRACT: F04701-76-C-0028

UNCLASSIFIED REPORT

DESCRIPTORS: *Global positioning system. Costs.
Scheduling, Risk, Radio navigation

(U)

The NAVSTAR GPS is a space-based radio navigation system that will permit users to determine accurately their three-dimensional position and velocity in real time. The GPS will consist of a space segment (satellites), control segment (ground monitors and control stations), and user segment (handpack, vehicular, airborne, and shipborne navigation sets). The network analysis program 'Advanced SOLVNET' was selected as the vehicle for performing the cost analysis of the Army user equipment Phase II effort. SOLVNET networks consist of (1) arcs, representing activities, and (2) nodes, representing the events (milestones) and logic of the project activity sequence. SOLVNET nodes consist of input and output rules. When the proper input rule conditions are realized, the node is said to be satisfied and its output arcs are initiated according to its output rule.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-2000 522L 19/1 15/7

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Decision Risk Analysis on the Development of
the Rapidly Emplaceable Minefield Marking
System (REMMS).

(U)

OCT 74 80P DeFilippis, Frederick ; Smith,
Jeffrey A. ;
REPT. NO. USAMERDC-2115
PRQJ: DA-1-X-56469-D-016
TASK: 1-X-564619-D-01603

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 30 Sep 74. Other requests for
this document must be referred to Commander, Army
Mobility Equipment Research and Development
Center, Attn: STSFB-0, Fort Belvoir, Va.
22060.

DESCRIPTORS: (*Markers, *Minefields),
Emplacement, Decision making, Management planning
and control, Risk, Efficiency, Cost effectiveness,
Military requirements, Time dependence, Trade off
analyses, Uncertainty, Aerial delivery, Low
altitude, Hand held, Tactical analyses,
Compatibility, Aerial mines, Minelaying,
Decision theory

(U)

IDENTIFIERS: GATOR mine system, REMMS (Rapidly
emplaceable minefield marking system), Rapidly
emplaceable minefield marking system, Design, M-56
mines

(U)

A decision risk analysis was made to determine the
most cost-effective system to rapidly mark
minefields. The analysis considered guidance in
the Required Operational Capability (ROC) for
a Rapidly Emplaceable minefield Marking
System (REMMS). Further guidance concerning
operational needs was provided by the USAMC
Project Manager for Selected Ammunition.
Considering risk, cost, time, and operational
capability, it was concluded that the system should
include a hand-emplaced marker and a marker to be
dispensed from a GATOR Dispenser at a 50-foot
altitude at 90 knots that can be used with the
GATOR Rotary wing Mine Dispensing System
and the M56 Scatter Mine System.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD- 915 106L 16/4.2 15/3.1

GENERAL RESEARCH CORP SANTA BARBARA CALIF

Leadtime and Risk Assessments for an
Intercept Feasibility Experiment. (U)

DESCRIPTIVE NOTE: Contract rept. Mar-Jul 73,
NGV 73 33P Dodson, E. N. ; Flueckiger,

W. D. ;

REPT. NO. GRC-CR-1-397

CONTRACT: DAHC60-73-C-0037

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 2 Oct 72. Other requests for
this document must be referred to Director, Army
Advanced Ballistic Missile Defense Agency,
Attn: RDWH-S, Arlington, Va. 22209.

DESCRIPTORS: (*Surface to air missiles, Antimissile
defense systems), Interceptors, Flight testing,
Lead time, Scheduling, Risk, Network flows,
Midcourse guidance, Guided missile fuzes, Homing,
Computer programming, Management planning and
control, Feasibility studies, Interactions (U)
IDENTIFIERS: Safeguard antiballistic missile
system (U)

In an extension of previous studies, an
experimental flight test program is evaluated in
terms of lead-times and schedule risk. The flight
test program is designed to assist in establishing
intercept (specifically, homing and fuzing)
techniques for a Midcourse Defense System
(MDS) capability. Two options are examined using
network analytic techniques. The program is
considered to have significant potential for schedule
slippage. The option with the lesser schedule risk
(Option A) also leaves unresolved several issues
which strongly influence the ultimate feasibility of
this defense concept. (Author) (U)

DDC REPORT BIBLIOGRAPHY SEARCH

AD-B000 129L

5/1

ABERDEEN PROVING GROUND
DIRECTORATE

Methodology, Risk/Cost
Elimination of R and
Costs.

(U)

DISCUSSION NOTE: Final rept. 1 Aug 73-21 May 74.
JUN 74 221P Dye, John H. ;
REPT. NO. APG-MT-4475
PROJ: RDT/E-1-U-665702-D-625, USATECOM-9-CQ-001-
000-052

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; Jun 74. Other requests for
this document must be referred to Commander, Army
Test and Evaluation Command, Attn: AMSTE-ME.
Aberdeen Proving Ground, Md. 21005.

DESCRIPTORS: (*Army research, *Cost
effectiveness), (*Test methods, Risk), Cost
analysis, Assessment, Methodology, Determination,
Deficiencies, Mathematical models, Efficiency,
Mathematical prediction, Questionnaires,
Defects (Materials), Elimination, Failure,
Data reduction, Benefits
IDENTIFIERS: Comparisons

(U)

(U)

A study was made at the US Army Aberdeen
Proving Ground to determine which research and
development test phases, if any, may be reasonably
eliminated based on risk/cost considerations. Test
data and results from past completed projects were
reviewed for evidence of predictable trends and
effects as to whether certain subtests were more or
less effective in disclosing deficiencies, for cost
of testing, and for means of quantifying for
comparative purposes the costs and risks of
consequences of fielding untested materiel. It was
concluded that past test data can be used to
establish trends and quantities of value in assessing
risks, however, future projection of consequences of
omitted tests in terms of cost and risk remain highly
subjective. Improvement is dependent on future
development of effective data banks, including
available feedback data from commodity users. It is
recommended that no further action be taken until
data collection, storage, and retrieval systems are (U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BBN29N

AD-B042 728L 1/3 1/2 15/5 14/1

DOUGLAS AIRCRAFT CO LONG BEACH CA

New Strategic Airlift Concepts. Volume
III. Risk Analysis.

(U)

DESCRIPTIVE NOTE: Final rept. May 78-Feb 79.
JUN 79 76P Eliel, L. F.; Hull, R.
E.; McWilliams, J. W.; Newton, Floyd C.;
Platte, M. M.;

REPT. NO. MDC-J8355-VOL-3
CONTRACT: F33615-78-C-3017
PROJ: 2404
TASK: 01

MONITOR: AFFDL TR-79-3062-VOL-3

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation; Jul 79. Other requests for
this document must be referred to Director, Air Force
Flight Dynamics Lab., Attn: FXB. Wright-
Patterson AFB, OH 45433.

SUPPLEMENTARY NOTE: See also Volume 5. AD-B042
724L.

DESCRIPTORS: *Jet transport planes, *Aeronautical
engineering, *Airlift operations, Risk, Cost
analysis, Operational effectiveness, Forecasting,
Computerized simulation, Takeoff, Aerodynamic
lift, Coefficients, Lift to drag ratio, Fuel
consumption, Figure of merit, Airships, Turbofan
engines, Turboprop engines, Gliders, Aircraft
nuclear propulsion, Tables (Data)

(U)

IDENTIFIERS: Aircraft design, C-5 aircraft, wing
in ground effect, PE62201F, WUAFBOL24040136

(U)

The primary objective of this study was the
definition of future strategic airlift vehicle
concept options and the technologies required for
successful operational implementation. The
definitions include vehicle characteristics,
operational features, and figures of merit reflecting
the relative effectiveness and cost implications of
the vehicle concept options. Configuration
concepts considered in this study include: advanced
turbofan and turboprop-powered (propfan) conventional
wing-body arrangements, a derivative of the C-5(H)
with an advanced-technology wing and propulsion
system, a nuclear powered vehicle, a wing-
distributed-load vehicle, a waterborne vehicle.

(U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A018 961 13/10 5/1 15/5

CALIFORNIA UNIV LOS ANGELES SCHOOL OF ENGINEERING AND
APPLIED SCIENCE

PERA (CV) Project Risk Management. (U)

JUN 74 34P Feiler, A. M. ; Junges, Glen

REPT. NO. UCLA-ENG-7445
CONTRACT: N00014-69-A-0200-4082

UNCLASSIFIED REPORT

DESCRIPTORS: *Aircraft carriers, *Maintenance,
*Management planning and control, *Risk analysis,
Scheduling, Allocations, Configuration management,
Decision making, Repair, Uncertainty (U)
IDENTIFIERS: TRANSIM 4 model, *Network
analysis (Management), CVA-67 vessel, PERT (U)

This report describes the application of TRANSIM
IV, a probabilistic network analysis technique, to
planning, scheduling and allocation of PERA
(Planning and Engineering for Repair and
Alterations) (CV) resources in connection with
aircraft carrier overhaul and repair. The PERA
(CV) application project was a joint undertaking
between the UCLA Project TRANSIM staff and the
PERA (CV) staff. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-8036 665L 16/4.2

ARMY MISSILE RESEARCH AND DEVELOPMENT COMMAND REDSTONE
ARSENAL AL PLANS AND ANALYSIS DIRECTORATE

Risk Assessment Update of Stinger-Post
Engineering Development Program. (U)

DESCRIPTIVE NOTE: Technical rept.,
DEC 78 22P Foster, L. E. ; Painter, B.
N. ; Pickens, D. E. ;
REPT. NO. DRCMI-D-79-1
PROJ: 1P665898MM66
TASK: 00

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Dec 78. Other requests for
this document must be referred to Commander, Army
Missile Research and Development Command, Attn:
DRCMI-T1, Redstone Arsenal, AL 35899.
DESCRIPTORS: *Risk, *Surface to air missiles,
Checkout procedures, Scheduling, Probability
density functions, Systems engineering, Networks (U)
IDENTIFIERS: AU00, AS466, P665898A (U)

This report represents an update of the Schedule
Risk Assessment performed by the STINGER-POST
Technical Evaluation Committee. The Risk
Analysis Team of the STED performed technical,
schedule, and cost assessments of the STINGER-POST
Engineering Development program which represented
the Government position to evaluate contractor
proposals. This report represents an update of the
Schedule Risk Assessment and considers
completion of some of the activities performed within
the past 15 months. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EHN29N

AD-B044 751L 16/4.2 5/1

ARMY MISSILE COMMAND REDSTONE ARSENAL AL PLANS ANALYSIS
AND EVALUATION DIRECTORATE

Risk Assessment Update of Stinger-POST
Engineering Development Program.

(U)

DESCRIPTIVE NOTE: Technical rept.,
OCT 79 20P Foster, L. E. ;
REPT. NO. DRSMI/D-80-1

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 17 Oct 79. Other requests for
this document must be referred to Commander, Army
Missile Command, Attn: DRSMI-RPT, Redstone
Arsenal, AL 35809.

DESCRIPTORS: *Surface to air missiles, *Test and
evaluation, *Risk, Army planning, Costs,
Scheduling, Management, Contractors

(U)

IDENTIFIERS: STINGER POST Engineering
Development Program, STATNET, STEC(Stinger-
POST Technical Evaluation Committee)

(U)

This report represents an update of the Schedule
Risk Assessment performed by the STINGER-POST
Technical Evaluation Committee of the US Army
Missile Research and Development Command on
11 March 1977. The Risk Analysis Team of
the STEC performed technical, schedule, and cost
assessments of the STINGER-POST Engineering
Development Program which represented the
Government position to evaluate contractor
proposals. Subsequently, a contract was let to
General Dynamics on 28 June 1977. This report
represents an update of the Schedule Risk
Assessment and considers completion of activities
performed between 28 June 1977 and 1 September
1979. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A026 681 19/6 12/2

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the Army Production Plan
for Self-Propelled Howitzers. (U)

DESCRIPTIVE NOTE: Final rept.,
JUN 76 23P Mazza, Thomas N. ;Paarmann,
Arthur W. ;Netzler, Martin, Jr;
REPT. NO. ORSAR/SA/N-41

UNCLASSIFIED REPORT

DESCRIPTORS: *Risk analysis, *Howitzers, *Self
propelled guns, Estimates, Production, Network
analysis(Management), Army planning (U)
IDENTIFIERS: M-109 howitzers(155-mm), M-110
howitzers(8-in.), M-110A1 howitzers(8-in.) (U)

The M109 and M110 self-propelled howitzers are
presently being product-improved. This analysis
assessed the risks of achieving the milestones
prescribed by the production plans for both
howitzers. Based on the relationships/interfaces
among the milestones, a network model was developed
to depict these relationships and serve as a road map
for accomplishing the goals within the desired time
frame. The results indicated a high risk of
meeting the schedule for full release with an
expected slippage of 12 months for the M109 and 5-
1/2 months for the M110A1. (Author) (U)

Georgia Institute of Technology
Atlanta School of Industrial An--ETC
Application of Decision/Risk
Analysis in Operational Tests and - ETC
DESCRIPTIVE NOTE:
September, 1975
Montgomery, D. C.
Callahan, L. G.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A013 729 21/5 15/5

RAND CORP SANTA MONICA CALIF

Performance/Schedule/Cost Tradeoffs and
Risk Analysis for the Acquisition of Aircraft
Turbine Engines: Applications of R-1288-PR
Methodology.

(U)

JUN 75 26P Nelson, J. R. ;
REPT. NO. R-1781-PR
CONTRACT: F44620-73-C-0011

UNCLASSIFIED REPORT

SUPPLEMENTARY NOTE: See also AD-780 636.

DESCRIPTORS: *Aircraft engines, *Turbines, *Air
Force procurement, *Logistics planning, Trade off
analyses, Weapon systems, Performance, Scheduling,
Cost analysis, Risk, Turbofan engines,
Afterburning

(U)

IDENTIFIERS: Cost models, Risk analysis,
*Logistics management, Rolls Royce RB 211
engines

(U)

The report discusses two applications of a cost-
estimating model that incorporates quantitative
measures of an engine's performance. A summary
measure, called time of arrival (TOA), can be used
in the decisionmaking process to trade off
performance, schedule, and cost during the conceptual
phase of aircraft turbine engines. The author
briefly reviews the TOA measure and cost-estimating
methodologies and then presents a tradeoff and risk
analysis of two present-day programs: the Rolls
Royce RB211 engine program and a new,
hypothetical, afterburning turbofan engine program.
The analysis indicates: (1) The cost growth
for the RB211 was due to an ambitious British
program, in terms of performance level demanded for
the specific schedule desired. (2) A schedule
requiring a new engine 'ahead of its time' results in
a higher cost if it is achieved; it also exposes the
engine, and the entire weapon system, to a higher
risk of performance shortfall, schedule slippage, and
cost growth. Future plans include an extension of
the TOA methodology to the assessment of ownership
costs for engines.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A019 932 19/1 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the US Army 155mm Cannon-
Launched Guided Projectile Program. (U)

DESCRIPTIVE NOTE: Interim note,
DEC 74 19P Netzler, Martin, Jr;
REPT. NO. AMSAR/SA/N-30

UNCLASSIFIED REPORT

DESCRIPTORS: *Guided projectiles, *Artillery
ammunition, *Cost analysis, Risk, Scheduling,
Production, Uncertainty, Networks, Statistical
analysis (U)

IDENTIFIERS: CLGB(Cannon Launched Guided
Projectile), *Cannon launched guided projectile,
Vert network analyzer, Network analysis, *155-mm
guided projectiles (U)

This analysis estimates the schedule and cost risks
associated with the Army 155mm Cannon-Launched
Guided Projectile (CLGP) development program.
The analysis considered the Army CLGP program
from 1 January 1975 to initiation of full scale
production. Uncertainties were analyzed by
simulating the program using a network format and
representing cost and schedule as random variables.
Statistics were obtained using the VERT network
analyzer. The planned program schedule and costs
were found to be close to those obtained from the
network analysis. (Author) (U)

How DCAA Uses Risk Analysis In
Planning and Programming Audits
DESCRIPTIVE NOTE: The Internal
Auditor
June, 1979
Neuman, Frederick

By employing risk analysis, DCAA has been able to optimize the use of limited auditor resources in meeting its audit responsibilities. Not only are we assured that the areas with highest payoff, such as operations audits, are scheduled for review; but we are equally assured that deferred audits are those in which the risk is minimal.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B010 208L 19/6 5/1

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

XM198 155mm Towed Howitzer Decision Risk
Analysis for ASARC/DSARC III. (U)

DESCRIPTIVE NOTE: Final rept.,
MAR 76 79P Olson, Stuart W.; Thier,
Norman H.;
REPT. NO. DRSAR/SA/R-17

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only.
Proprietary Info.: Mar 76. Other requests for this
document must be referred to Commander,
Armament Command, Rock Island Arsenal,
DRSAR-SA, Rock Island, Ill. 61201

DESCRIPTORS: (*Howitzers, *Artillery,
(*Risk analysis, *Decision making, *Uncertainty,
Uncertainty, Cost analysis, *Computerized simulation,
Computerized simulation, *Army planning, *Germany,
planning, *United Kingdom, *Italy, *Towed bodies,
Germany, *United Kingdom, *Italy, *Towed bodies,
Range, *Readiness (U)
XM198, 155-mm howitzers, XM-198
155-mm), VERT (venture evaluation
technique), Venture evaluation review
technique, FH-70 howitzers (155-mm), M-114
howitzers (155-mm), Soft recoil, LCSR (Large
caliber soft recoil system), Large caliber soft
recoil system (U)

A decision risk analysis (DRA) was performed for
the XM198 155mm Towed Howitzer Program. The
alternatives analyzed are those to be decided at
ASARC/DSARC III for the XM198 program. They
are: continue the XM198 into limited production
or terminate the XM198 and either purchase the
United Kingdom, Federal Republic of
Germany, Italian FH-70 155mm towed howitzer or
develop a large caliber, soft recoil 155mm towed
howitzer. Improving the current standard M114A1
155mm towed howitzer to provide an interim improved
capability was also analyzed. The DRA was
conducted on the basis of the uncertainties in the
cost and schedule associated with each alternative,
using the Venture Evaluation Review Technique
(VERT) network simulation. An appendix discusses (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A026 680 19/6 12/2

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the M110E2 Self-
Propelled Howitzer (From Development
Acceptance in-Process Review to Initial
Operating Capability).

(U)

DESCRIPTIVE NOTE: Final rept.,
MAY 76 22P Paarmann, Arthur W.; Netzien,
Martin, Jr.; Mazza, Thomas N.;
REPT. NO. ORSAR/SA/N-40

UNCLASSIFIED REPORT

DESCRIPTORS: *Risk analysis, *Howitzers, *Self
propelled guns, Acceptance tests, Simulation,
Perf, Propelling changes

(U)

IDENTIFIERS: M-110E2 howitzers(9-in.), XM-
109E2 propelling changes, Vent

(U)

The cost and schedule risk analysis associated with
the M110E2 self-propelled howitzer was performed.
Uncertainties associated with the time frame
between the Development Acceptance (DEVA), In-
Process Review (IPR) and Initial Operating
Capability (IOC) are considered. Evaluation
was accomplished with the Venture Evaluation
Review Technique (VERT) network analyzer.
Results showed very low risk in achieving IOC
within the desired time frame.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A009 077 19/6

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
OFFICE

Reassessment of the Aluminum Bottom Carriage
for the XM198 Howitzer. (U)

DESCRIPTIVE NOTE: Technical note,
MAR 75 47P Powell, Roger W. ; Morris,
William H. ;
REPT. NO. SAC-Note-18

UNCLASSIFIED REPORT

DESCRIPTORS: *Howitzers, *Carriages, Aluminum,
Decision making, Costs, Risk (U)
IDENTIFIERS: M-198 howitzers(155-MM), XM-198
howitzers(155-MM), Decision risk analysis (U)

A decision risk analysis was performed to compare the expected cost, schedule, and technical risks of the current development of a steel bottom carriage for the XM198 155mm howitzer with those of a proposed parallel development of an aluminum version of the bottom carriage. Computerized PERT simulation networks were used to represent the time and technical risk interrelationships among the activities and decision points of the alternative programs. Expected costs were based on an approximation of the planned XM198 buy with the proportion of steel or aluminum carriages determined by alternative production change-over dates. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N
AD-A022 359 19/6

ARMY ARMAMENT COMMAND ROCK ISLAND ILL SYSTEMS ANALYSIS
DIRECTORATE

Risk Analysis of the M1062 SP Howitzer
(from DEVA IPR to Initial Operating
Capability).

(U)

NOV 75 26P

UNCLASSIFIED REPORT

DESCRIPTORS: *Self propelled guns, *Howitzers,
*Risk analysis, Scheduling, Production control,
Cost estimates, Quality assurance,
Retrofitting

(U)

IDENTIFIERS: M-110 howitzers(8-IN.), M-
110E2 howitzers(8-IN.), M-106
cartridges(8-IN.), M-168 propelling charges,
XM-188E3 propelling charges

(U)

This study was performed to assess the cost and
schedule risks associated with achieving Initial
Operating Capability (IOC) of the M1062
Self-Propelled Howitzer using the XM168E3
propellant charge (Zone 8 only) and firing the
M106 Projectile.

(U)

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. EHN29N

AD-8005 061L 13/10 13/13

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Decision Risk Analysis (DRA) on the
Development of the Bridge-Erection Boat for
the Ribbon Bridge.

(U)

MAY 75 74P Smith, Jeffrey A. ;
REPT. NO. USAMERDC-2143
PROJ: DA-1-G-764717-DH-01
TASK: 1-G-764717-DH-0105

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 30 Dec 74. Other requests for
this document must be referred to Commander, Army
Mobility Equipment Research and Development
Center, Attn: AMXFB-S2, Fort Belvoir, Va.
22060.

DESCRIPTORS: (*Boats, Experimental design),
(*Bridges, Construction), Fabrication, Risk,
Assessment, Decision making, Systems analysis,
Mathematical models, Simulation, Computer
programs, Monte Carlo method, Costs,
Scheduling

(U)

IDENTIFIERS: *Ribbon bridges, *Bridge erection
boats, Decision risk analysis

(U)

This report documents the decision risk analysis
(DRA) that was performed on the development of the
bridge-erection boat for the Ribbon Bridge. The
DRA was done to quantify the risks, costs, and
times involved for each of six candidate bridge-
erection boats. A network was developed for each
candidate boat and two networks were developed for
simulating competitive prototyping during the EOT
phase. A computer program, utilizing a Monte
Carlo technique, was used to simulate each of the
development approaches and to produce output
statistics in terms of cost, schedule, and
performance. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B005 051L 13/10 13/13

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Decision Risk Analysis (DRA) on the
Development of the Bridge-Erection Boat for
the Ribbon Bridge.

(U)

MAY 75 74P Smith, Jeffrey A. ;
REPT. NO. USAMERDC-2143
PRDU: DA-1-G-764717-DH-01
TASK: 1-G-764717-DH-0106

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: 30 Dec 74. Other requests for
this document must be referred to Commander, Army
Mobility Equipment Research and Development
Center, Attn: AMXFB-SP, Fort Belvoir, Va.
22060.

DESCRIPTORS: (*Boats, Experimental design),
(*Bridges, Construction), Fabrication, Risk,
Assessment, Decision making, Systems analysis,
Mathematical models, Simulation, Computer
programs, Monte Carlo method, Costs,
Scheduling

(U)

IDENTIFIERS: *Ribbon bridges, *Bridge erection
boats, Decision risk analysis

(U)

This report documents the decision risk analysis
(DRA) that was performed on the development of the
bridge-erection boat for the Ribbon Bridge. The
DRA was done to quantify the risks, costs, and
times involved for each of six candidate bridge-
erection boats. A network was developed for each
candidate boat and two networks were developed for
simulating competitive prototyping during the EDT
phase. A computer program, utilizing a Monte
Carlo technique, was used to simulate each of the
development approaches and to produce output
statistics in terms of cost, schedule, and
performance. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 8NN29N

AD- 759 281 15/5

ARMY MOBILITY EQUIPMENT RESEARCH AND DEVELOPMENT CENTER
FORT BELVOIR VA

Risk Analysis of the Supply-Handling
Conveyor System.

(U)

DESCRIPTIVE NOTE: Final rept.,

JAN 73 54P Smith, Jeffrey A. ;

REPT. NO. USAMERDC-2050

PROJ: DA-1-G-664717-DH-14

TASK: 1-G-664717-DH-1404

UNCLASSIFIED REPORT

DESCRIPTORS: (*ARMY EQUIPMENT, HANDLING), (*CONVEYORS,
ARMY EQUIPMENT), WEIGHT, CONFIGURATION, LOADS(FORCES),
VELOCITY, DESIGN, PERFORMANCE(ENGINEERING), FIRE
RESISTANT MATERIALS, COMPUTER PROGRAMMING,
PROBABILITY

(U)

IDENTIFIERS: *RISK ANALYSIS, *COST ANALYSIS

(U)

The report documents the risk analysis that was performed on a supply-handling conveyor system. The risk analysis was done to quantify the risks involved for project development in addition to compliance with the draft AWC regulation on risk analysis. The conveyor system is in the final phase of concept formulation and is ready for the system description/coordinated test program in-process review. The objective of this analysis is to quantify the development time, cost, and performance for the System with respect to various development approaches. A Decision Tree type Logic Diagram is used to graphically portray each development approach. A computer program, utilizing a Monte Carlo technique, is used to simulate each of the development approaches and to produce output statistics in terms of cost, schedule, and performance. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-C007 994 19/3

ABERDEEN PROVING GROUND MD

Competitive Developmental Test (Technical
Performance Phase) of Armored
Reconnaissance Scout Vehicle, XM800.

(U)

DESCRIPTIVE NOTE: Test plan.

JUL 73 122P Sobczyk, J. P.; Sova, J.

T., Jr.; Martin, C. E., Jr.

PROJ: 1X564605D417

UNCLASSIFIED REPORT

NOFORN

DESCRIPTORS: *Armored vehicles, *Scout cars, M-800
vehicles, XM-800 vehicles, Amphibious vehicles,
Tracked vehicles, wheeled vehicles, Comparison,
Operational test and evaluation, Human factors
engineering, Fire control systems, Maintainability,
Safety

(U)

IDENTIFIERS: Environmental tests, Mobility,
Reliability, Risk analysis,
Performance(Engineering), Vulnerability
analysis, Artillery fire, Hit probabilities,
Ammunition damage, Night warfare, PE64605A,
AS417

(U)

The Armored Reconnaissance Scout Vehicle is
a small, 3-man, lightly armored combat vehicle. The
combat-mission requirements emphasize the need for a
specially designed scout vehicle that will provide a
balanced combination of mobility, agility, detection
capability in all weathers, quiet operation, and
firepower and protection unique to the ground scout-
vehicle mission. The systems offered for test will
be equipped with the gun, automatic, 20-mm, M139,
the AN/VRC-49 radio system, the AN/VIC-1
intercommunication system, and certain other standard
items; however, the contractors have considerable
latitude in the manner in which most performance and
physical characteristics are met. The competing
systems will be wheeled versus tracked vehicles.

(U)

Compensation and Benefits
DESCRIPTIVE NOTE:
Personnel Journal
November, 1979
Volume 58
Thomsen, David J.

There are many examples
of how Bayesian statistics
(also known as risk analysis)
can be used in the area of
compensation and benefits.
Several examples are given.

"We Used Risk Analysis To
Move Our Computer"
DESCRIPTIVE NOTE:
Industrial Engineering
May, 1977
Townsend, H. William R.
Whitehouse, Gary E.

This article presents a risk
analysis used by a company
to measure alternative methods
for relocating their large
corporate computer.

RISK Related Studies

DOC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. SHN29N

AD-B042 724L 1/3 1/2 15/5

BOEING AEROSPACE CO SEATTLE WA BOEING MILITARY AIRPLANE
DEVELOPMENT ORGANIZATION

New Strategic Airlift Concepts Study.
Volume I. Executive Summary.

DESCRIPTIVE NOTE: Final rept..

JUL 79 57P Barber, E. A. :

REPT. NO. D180-25197-1

CONTRACT: F33615-78-C-3024

PROJ: 2404

TASK: 01

MONITOR: AFFDL TR-79-301

Dist. to Gov't. agencies only;
JUL 79. Other requests for
must be referred to Director, Air Force
AFOS Lab., Attn: FXB, Wright-
Patterson AFB, OH 45433.

REMARKS: NOTE: See also Volume 3, AD-B042
1250.

DESCRIPTORS: *Jet transport planes. *Aeronautical
engineering. *Airlift operations. Life cycle costs.
Strategic analyses. Logistics support. Long
range (Distance). Risk. Threat evaluation. War
games. Joint military activities. Logistics
planning. NATO. Military aircraft. Aircraft
nuclear propulsion. Turboprop engines. Airships.
Gliders (U)

IDENTIFIERS: Aircraft design. Boeing 747 aircraft.
PES2201F, WUAFDOL24040103 (U)

The New Strategic Airlift Concepts Study
had as its purpose the design, analysis and
evaluation of aircraft concepts and technologies
which could be utilized in a new, long range,
military heavy logistics transport intended for
service in the 1990's. Eight conceptual aircraft
were configured and analyzed: (1) New Turboprop,
(2) Derivative of the 747-200F, (3) Lighter-
Than-Air Airship, (4) Detachable Cargo
Pod, (5) Nuclear, (6) Distributed Load
aircraft with twin fuselages for wing-bending-moment
relief, (7) Tug-Glider combination, (8)
Advanced Turboprop (Propfan). Advanced
technology was used extensively for all concepts
except the Derivative. Phase I of a two stage (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A061 874 5/1 5/3

ARMY PROCUREMENT RESEARCH OFFICE FORT LEE VA

Economic Price Adjustment (EPA)
Provisions.

(U)

DESCRIPTIVE NOTE: Final rept..

DEC 77 87P Beeckler, C. Eugene ; Newlin,

Kimrey D. ;

REPT. NO. APR0-703

UNCLASSIFIED REPORT

DESCRIPTORS: *Contract administration, *Costs,
Contracts, Policies, Department of Defense,
Inflation (Economics), Risk, Profits, Cost
analysis

(U)

IDENTIFIERS: EPA (Economic Price Adjustment),
Fixed price contracts

(U)

This report reviews the US Army Materiel Development and Readiness Command's (DARCOM) Economic Price Adjustment (EPA) experience. In the fall of 1973 few DARCOM contracts contained EPA provisions and the resulting inflation caused many DARCOM contractors to absorb large cost increases on their firm-fixed-price contracts. Although many contractors requested relief as a result of inflation, there was no legal method to grant relief since they did not contain EPA provision. Since the current economic trend foresees continued inflation, a need exists to study recent DARCOM EPA experience to preclude a repeat of the past. The writers believe that Economic Price Adjustment provisions are necessary contractual options available to the Contracting Officer in the selection of contract type. The contract type should be a fair, reasonable, and equitable risk allocation between the contract prices. The report concludes that today's EPA policy promulgated since 1974 dictates current usage. The findings show that current usage fails to take into account DDC policy on risk, profit, contract type, and cost analysis. The recommendations include: revision to DDC policy on EPA, risk, profit, contract type, and cost analysis; areas of emphasis on the use of EPA; and potential areas for future studies.

(U)

Inheriting Risk in Acquisition
or Merger

DESCRIPTIVE NOTE:

Financial Executive

September, 1978

Volume 26

Betterley, Delbert A.

This article considers the risk element that must be considered in an acquisition/merger consideration. In such a situation both the question of what a new company can do for you (business risk) and what it may do to you (loss risk) must be addressed.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A042 942 5/1

DEFENSE SYSTEMS MANAGEMENT COLL FORT BELVOIR VA

SNAP - Simplified Network Analysis
Portrayal for Planning and Control. (U)

DESCRIPTIVE NOTE: Study project rept.,
MAR 77 49p Brown, Kenneth N. ;

UNCLASSIFIED REPORT

DESCRIPTORS: *Network analysis(Management),
*Management planning and control, Decision making,
Risk analysis, PERT, Interactions, Army
planning, Simplification, Methodology,
Organization theory, Flow charting (U)
IDENTIFIERS: Project management, Gantt charts (U)

Network techniques are widely used to assist the manager in understanding, planning, and controlling complex projects. The more complex approaches such as decision-risk analysis and PERT/CPM explore alternatives and deal with interactions. Any complex enterprise must consider alternatives and interactions, but there is virtue in simplicity. This report explores a simplified network analysis approach which gives special consideration to evaluation as part of the process of achieving objectives. It capitalizes on the idea that evaluation results in a decision, and that in turn, this gives visibility to alternatives. The technique can be tailored to the level of management and the task addressed by the manager/network-user. Experience with two major tasks within different Army projects is related to show how the technique was applied. The future application is explored by codifying the technique with regard to its basic considerations and mechanics and by suggesting the scope of its utility. (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-B043 742L 9/2 15/3

CHARLES STARK DRAPER LAB INC CAMBRIDGE MA

Summer Study on Air Force Computer
Security (1979), 18 June-13 July 1979. (U)

DESCRIPTIVE NOTE: Final rept.,
OCT 79 74P Dewolf, J. Barton ;
Szulewski, Paul A. ;
REPT. NO. R-1326
CONTRACT: F49620-79-C-0060
PROJ: 2305
TASK: D3
MONITOR: AFOSR TR-80-0094

UNCLASSIFIED REPORT

Distribution limited to U.S. Gov't. agencies only;
Test and Evaluation: Oct 79. Other requests for
this document must be referred to Director, Air Force
Office of Scientific Research, Attn: XOP,
Bolling AFB, DC 20302.

DESCRIPTORS: *Data processing security, *Computer
program verification, *Data management, Data bases,
Air Force operations, Command and control systems,
Global communication systems, Input output
processing, Risk, Delphi techniques, Mathematical
models, Kernel functions (U)

The objectives of the study were to evaluate
current research and development in relation to Air
Force requirements for multilevel secure computer
systems, to identify critical research issues, and to
provide guidance and recommendations for future
research and development emphasis. To this end,
over 150 attendees representing academic, industrial,
civilian, government, and military organizations,
participated from June 18 through July 13 in an
intensive technology review and evaluation. The
study concluded that the field of computer security
research has made remarkable progress since the 1972
planning study sponsored by the Air Force
Electronics Systems Division (ESD). The
reference monitor concept recommended in that study,
and the resulting focus on mathematical models of
security policy, operating system kernels, and
verification has led to successful prototype
implementations of trusted operating systems.
Production versions of these trusted operating
systems are expected to be available soon, and steps (U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-C012 367 15/3 5/1

ARMY WAR COLL CARLISLE BARRACKS PA

Priorities in Army Weapon Systems
Development.

(U)

DESCRIPTIVE NOTE: Student thesis.

MAR 70 85P Diller, Richard W. ;

UNCLASSIFIED REPORT

NOFORN

DESCRIPTORS: *Weapon systems, *Resource management,
*Planning programming budgeting, *Army planning,
Army budgets, Military requirements, Ranking,
Allocations, Decision theory, Army equipment,
Cost effectiveness, Weapon system effectiveness,
Defense planning, Integrated systems, Theses
IDENTIFIERS: *Priorities, Zero base budgeting,
Threat evaluation, Risk analysis

(U)

(U)

As Army weapon systems become more complex and more costly, there is an ever-increasing need to concentrate resource allocation on priority needs and to be able to thoroughly justify the allocations. This thesis addresses the problem of establishing meaningful priorities for weapons systems development in the context of overall resource management. Recommendations are made for defining a dynamic and meaningful set of priorities which would relate weapon systems development to all other Army programs. It is estimated that, in 60-90 days, a small Army planning group could develop a priority ranking of approved and projected program elements defined over the current budget year and the succeeding 10-year period. The basic management tools that would be used are preference decision theory and a zero base concept for allocating each year's budget/program. The Five Year Defense Plan coding system, modified as needed, would provide the base accounting system. Once developed, the priority list would be kept up-to-date and serve as a basic guide for all Army planning and resource management. Weapon systems developers would derive their priority guidance from the basic priority list.

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A034 595 15/5

NAVY FLEET MATERIAL SUPPORT OFFICE MECHANICSBURG PA
OPERATIONS ANALYSIS DEPT

Analysis of Proposed Initial Stocking
Policies.

(U)

DEC 76 54P Engelman, J. L. ;
REPT. NO. 116A

UNCLASSIFIED REPORT

DESCRIPTORS: *Inventory analysis, *Inventory
control, Policies, Cost effectiveness, Naval
logistics, Mathematical models, Spare parts,
Military requirements, Naval equipment, Abundance,
Threshold effects, Lead time, Mathematical
prediction, Stockpiles, Repair, Risk analysis
IDENTIFIERS: Variable threshold rule.

(U)

Availability

(U)

DDCI 4140.42 establishes policy for the
determination of initial requirements for secondary
item spare and repair parts. DDCI 4140.42 also
authorizes alternative models whose objective is to
minimize time-weighted requisitions short. The
Variable Threshold Rule, an alternative initial
stockage model developed for the Navy, has been
approved as an acceptable substitute for the DCD
model. This study compares the performance of the
current UICP risk model (which meets the
alternative model criteria) with the Variable
Threshold Rule, the DDCI rules, and the current
stocking criteria. The study shows that the
Variable Threshold and the UICP policies are
both more cost-effective than the DCD model, but
the Variable Threshold is more flexible and
easier to implement. (Author)

(U)

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A038 779 15/5 12/1

NAVAL POSTGRADUATE SCHOOL MONTEREY CALIF

A Statistical Analysis of the Effectiveness
of Program Initial Conditions as Predictors
of Weapon System Acquisition Program
Success.

(U)

DESCRIPTIVE NOTE: Master's thesis,
DEC 76 90P Henry Douglas Davies :

UNCLASSIFIED REPORT

DESCRIPTORS: *Weapon systems, *Military procurement,
*Statistical analysis, Management planning and
control, Risk analysis, Cost overruns,
Predictions, Scheduling, Correlation techniques,
Test and evaluation, Inflation(Economics),
Uncertainty, Development tests, Factor analysis,
Systems management

(U)

This thesis examines the relationship between
weapon system acquisition program's initial
conditions (project size, technical risk and
program length) and program outcomes in the areas
of cost, performance, and schedule. The study
employs a nonparametric correlation procedure and
Mann-Whitney U Tests as the principal
analytic tools of the examination process. The
results of the analysis indicate that a definite
relationship between cost, schedule growth and program
size exists. In a significant number of cases,
large programs incurred greater absolute cost growth
with less schedule slippage than did programs of
smaller size. The variance in project technical
performance is largely unexplained by the
methodology, although there are indications that it
is related inversely to program length.
(Author)

(U)

14 REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM	
15 ESD-TR-79-42	1. GOVT ACCESSION NO.	2. RECIPIENT'S CATALOG NUMBER	
4. TITLE (and Subtitle) A New Design for the Programmable Button System at the GEODSS ETS		5. TYPE OF REPORT & PERIOD COVERED Project Report	
7. AUTHOR Lawrie E. Eaton		6. PERFORMING ORG. REPORT NUMBER Project Report ETS-19	
9. PERFORMING ORGANIZATION NAME AND ADDRESS Lincoln Laboratory, M. I. T. P.O. Box 73 Lexington, MA 02173		8. CONTRACT OR GRANT NUMBER 1-19028-7b-C-4402	
11. CONTROLLING OFFICE NAME AND ADDRESS Air Force Systems Command, USAF Andrews AFB Washington, DC 20331		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS Program Element No. 63428F Project No. 212b	
12. MONITORING AGENCY NAME & ADDRESS Electronic Systems Division Hanscom AFB Bedford, MA 01731		13. DATE 14 March 1979	
12 14		14. SECURITY CLASS. (of this report) Unclassified	
		15. DECLASSIFICATION/DOWNGRADING SCHEDULE	

ABSTRACT

Two new design approaches are presented for upgrading the programmable button interface at the GEODSS ETS. These designs make use of the Motorola microprocessors. The design simplifies the logic, standardizes the interface to the host computer and provides increased versatility with the micro-processor software.

This document assumes the reader is familiar with the GEODSS Experimental Test System (ETS) and its basic operational configuration.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. 064325

AD-A015 624 15/5 5/1
NAVAL TRAINING EQUIPMENT CENTER ORLANDO FLA TRAINING
ANALYSIS AND EVALUATION GROUP

Acquisition Cost Estimating Using
Simulation.

(U)

DESCRIPTIVE NOTE: Final rept..

SEP 75 29P Okrasal, Henry C. ; Pannish,
William F., Jr;
REPT. NO. TAEG-TM-75-4

UNCLASSIFIED REPORT

DESCRIPTORS: *Cost estimates, *Computerized
simulation, Government procurement, Logistics
support, Computer programming, Mathematical models,
Risk, Uncertainty

(U)

IDENTIFIERS: ACES model

(U)

Acquisition cost estimates developed as single
point values are, at best, misleading and, at worst,
impossible to achieve. Single point estimates do
not sufficiently reflect the assumptions, judgment or
apprehensions of the estimator. This paper deals
with a technique for incorporating uncertainty and
risk into the acquisition cost estimating procedure
such that the estimates are presented as a range of
values, encompassing engineering, manufacturing and
logistic support estimates. The cost estimating
model, a pragmatic application of simulation and
classical cost estimating procedures, has been
programmed in BASIC and is generalizable and
exportable.

(U)

Risk Analysis Makes Chemical
Plants Safer

DESCRIPTIVE NOTE:

C and En Oct. 2, 1978

A brief discussion of various
groups and techniques for
considering hazardous
situations in manufacturing
is presented in this article.

Risks Of Shipping Chemicals
Studies

DESCRIPTIVE NOTE:

E and Engineering Technology

April 5, 1976

This article discusses a hand-
book that has been developed
for dealing with chemical
hazards associated with the
shipment of chemicals.

DDC REPORT BIBLIOGRAPHY SEARCH CONTROL NO. BHN29N

AD-A073 510 5/1

RAND CORP SANTA MONICA CA

Air Force Acquisition Options for the 1980s:
A Briefing on Study Plans. (U)

DESCRIPTIVE NOTE: Interim rept.,
JUL 79 18P Smith, Giles K. ;
REPT. NO. RAND/N-1241-AF
CONTRACT: F49620-77-C-0023

UNCLASSIFIED REPORT

DESCRIPTORS: *Air Force procurement; *Air Force
planning; weapon systems; Acquisition; Policies;
Risk; Cost analysis; Trade off analyses;
Contract administration; Air Force budgets (U)

Presents the slides and text of an informal
briefing given at HQ AFSC in June 1979.
Outlines the current status of RPN 3702, 'Air
Force Acquisition Options for the 1980s,' puts
this project in the context of previous Rand work,
and describes study plans. Emphasis is on how to
acquire weapon systems, not what systems to acquire.
(Author) (U)

**DA
FILM**